

INDUSTRIAL EFFICIENCY IN INDIA



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PREFACE

THE present work was originally planned as the third volume to my *Indian Business*; but circumstances forced it to appear independently. The survey of Indian business, the first of its kind, was undertaken and completed during my stay in Poona in 1944-46. Since it was first written, so many revolutionary changes have taken place in all spheres of our national life that in many places substantial changes had to be effected 'before' it went to the Press. But still the original structure remains.

The problem of industrialisation is the most vital one under our existing conditions for more reasons than one; but equally important is the problem of our existing industries which suffer from so many inefficiencies in cost and structure, in management and personnel and, what not. For the present when seller's market still persists, the existence of inefficiency does not hamper sale. But in a competitive economy inefficiency is dangerous not only from the standpoint of industry itself but also from that of social cost to consumers. It is of course true that under conditions through which the whole world is passing, we cannot see an immediate end to the seller's market in many spheres and if the existing abnormal situation is followed by complete nationalisation of production and distribution, buyer's market may never come back. But the existence of inefficiency on the plea of such artificial strongholds sheltering industry is deplorable from the standpoint of high social cost it involves. It should be remembered that the existence of high costs of production raises the prices and hence stands in the way of price decline which is so very essential for fighting inflation and improving the conditions of the masses. Price control with pressure from the government for cost adjustment has been effectively tried in Germany and America during the years of the second great war as a part of anti-inflationary measure; it has not yet been recognised in this part of the world. So far all considerations by Indian scholars regarding the inefficiency of Indian industries have been devoted to only one question viz., that of labour, and even the efforts of our industrialists have emphasized only one factor, viz., exploitation of labour. But that has simply made the complex problem all

the more complicated. It has been the aim of present work to analyse the various possible aspects of efficiency in our industries and to suggest ways and means of securing them.

There are people in our country who feel that many of the inefficiencies of our existing industries and difficulties of new ones may be removed by a complete socialisation of investment. Nothing of the kind. A complete socialisation of investment becomes an effective, nay, more effective, substitute for private capitalism after a certain stage in the development of economic organism, and not at any and every stage. The point I have pursued in my *Towards Marxian Destination* and my Bengali work *Economic Order In Free India*. There I have argued in part as follows:

A noticeable feature of capitalistic development in recent years is the decline of private capitalism whose place has come to be occupied by group capitalism or state capitalism. Mr. Colin Clark has collected certain statistical figures for Britain in his *National Income & Outlay* and his broad conclusion is that "large private incomes have ceased to count as a source of saving"The same however is not true for all countries. At the present stage of economic development in India we have to depend much on private capitalism which if discouraged at this stage would lead to decumulation. Institutional saving is only a negligible proportion of our total investment.....While in Britain private capitalism has come to a standstill it is predominant in a country like India where the growth of capital depends upon the accumulation of wealth by private saving. We cannot say for India what Keynes has said for England that "in existing conditions saving by institutions and through sinking funds is more than adequate and that measures for the redistribution of incomes in a way likely to raise the propensity to consume may prove positively favourable to the growth of capital.....it will still be possible for communal saving through the agency of the state to be maintained at a level which will allow the growth of capital up to the point where it ceases to be scarce."

The same cannot be said of this country and what is true of India is also true of many other countries of the world which have yet a long ground to cover in matters of economic development.

Production drive is the need of the hour and yet production is declining. Capitalists who entrusted to the extent of Rs. 400 crores to a foreign regime in India for financing a war in which India's interest was not involved feel shy to invest to-day when the country is liberated from foreign yoke. There are contributory causes to this. The growth of inefficiency in all sectors, heavy depreciation of existing plants and equipments under pressure of war work and obsolescence of many, political situation in the country and the Far East and prospect of nationalisation after ten years, socialistic speeches by responsible ministers without the sanction of the cabinet, go-slow methods adopted by labour and growing absenteeism in many centres have all their shares in the decline of production; but transport remains the bottleneck number one. It is true that we are not producing as much as we require; but even what is produced cannot be distributed, with consequent accumulation of unsold stock and unfavourable effect on the psychology of the producers. A re-institution of control has been favoured by many; but so long as the transport problem remains we cannot say that decontrol was given full chance of operation. A better approach would have been to withdraw controls altogether, the Government specialising entirely in providing better transport facilities. For, whatever the faults of private enterprise, it has a natural tendency to compete, particularly so when at present there are accumulated stocks in many lines of our industries. Controls are good enough in arresting the rise of prices; but at the same time they provide little scope for price decline, even when such decline may be possible. Besides, in a vast country like India, full-fledged controls have not yet been tried, with the consequent existence of loopholes which breed corruption and blackmarketing. Over and above, administrative lethargy, and worse still, corruption, in many cases stand in the way of early disposal of products, which otherwise would have been sold out for more effective uses and paved the way for further production.

Whether nationalisation or socialisation, control or decontrol, the fact remains that some sort of industrial recession has already

started casting its shadow over productive enterprise. This is clear in growing unemployment, accumulating stocks, producers' lethargy and investors' hesitancy. But, if, with so much of experience of the great depression behind us, we allow this recession to develop, we will be inviting a great calamity. The question now is, how to avert it? If our experience of the past is to be of any use, we must say that under existing conditions when recession has started government activity is essential, not as a substitute, but as a direct stimulus, as a supplement, to private investment. For, during depression, "the paradox is to be found in 250,000 building operatives out of work, when more houses are our greatest material needs," and these cannot be employed except through new and productive state enterprise creating "primary" employment. Once the ball is set rolling, "secondary" and "tertiary" employments will take their own course through stimulus to private investment. What is being done at present exhibits a thorough non-understanding of the problem. A large number of development plans have been prepared and some say that there are many more on which the ministerial speeches may thrive and be enriched for the next three years, but the extent of work so far done is hopelessly inadequate and exhibits a bankruptcy of economic genius. Where plans are prepared for propaganda purposes, naturally they will be lacking in soundness. And still the amount of money that is being spent on these commissions and committees—and I am afraid, in course of two years, the Government has appointed much more of these than the whole record of British Rule can claim—as initial expenditure without any material benefit exhibits a heavy drain on the resources of a starving economy. This, rather than any other aspect of the matter, should provide food for thought here. "For whether projects are dependent on funds raised internally or externally, or in hard or soft currencies, it is essential that best possible value for money should be forthcoming. India is not such a rich country that she can afford to waste her capital." The ways and means of state action to avert the forthcoming calamity through the floatation of Employment Creation Bills have been discussed in the concluding chapter. But still more urgent is this that the administrators should set up an impersonal standard of behaviour in themselves and take the vast administrative

machinery with themselves, where already a cleavage, and worse still, inefficiency, due to partial appointments of relatives, friends and partymen, exist. The capitalists also have drifted away and exploiting and thriving on the weakness of the administration and the things are going worse day by day.

Since the attainment of independence, the characteristics of the Indian economy have been the persistence of food shortage on a large scale, heavy decline in foreign assets and the problem of adjusting the adverse balance of payments. The people, tired of war economy and dependent economy, heaved a sigh of relief when they achieved independence; but they have been thoroughly disillusioned, particularly so when they find a gulf between what they hear and what they find. The reaction has already set in. People are not unaware that the hands of the new administration are full of knotty problems; but then the people should be taken into confidence, which they have not been so far. The fact is that the administrative machinery of the Govt. has to be directed towards devising measures more short-term than long-term and these should be so tackled as may submerge into long-term measures and give permanent benefit to the entire economy. Our economy is passing through emergency at present; and to meet it a strong govt. policy backed by action for inducing, and, if necessary, for stimulating investment, for encouraging labour and capital, for increasing production all round is the need of the hour. Democracy can be safe only in a prosperous economy.

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INDUSTRIAL EFFICIENCY IN INDIA

INTRODUCTION

EFFICIENCY AS A FACTOR IN BUSINESS

Profit-motive is the underlying feature of every business. When a businessman invests, he expects to earn at least a normal return from this investment. We do not say, he earns the expected minimum; but he expects to earn that much though the actual earning may be more or less. Expectation of earnings is not the same thing as profits obtained. At the outset he is guided not by profits realised but by expectation of profits. But then, what constitutes this expected minimum? This it is difficult to lay down. The matter has been complicated all the more by devices like stock-watering. Economists have argued that profits tend to equality and profits tend to a minimum. Nothing of the kind. Profits of different concerns do never tend to equality nor towards a minimum, particularly in these days when monopolistic conditions prevail everywhere. But this much may be said that for ordinary concerns this minimum is constituted, in the first place, of interest on capital, if any, supplied by the owner; secondly, the remuneration of the owner himself and any other member of the family working without any visible salary, the rate being determined by their expectation of earning elsewhere, and thirdly, a certain rate percent on money invested, to be determined, under competition, by the prevailing rate, and under monopolistic conditions by the decision of the owner as influenced by the elasticity of demand for the goods in question. (This last item of earning is called the entrepreneur's share in Economics.) This constitutes

the minimum which must be earned, if not immediately, at least in the future. Above this the businessman tries to earn as much more as possible.

In recent years, in advanced countries, as an aid to increasing profits, an emphasis is being laid on a new factor, almost neglected or unknown in our country, viz., efficiency. In the traditional phase of business which continues in our country even now, whatever brings profit is correct. When a business failed, very few persons bothered about efficiency or otherwise, for they had no idea of the same, but merely tried to introduce some change according to circumstances, so far as they could judge from a rough and unscientific study, these changes continuing till their efficacy was challenged by a new set of circumstances. We are still mostly in this phase of business and there is hardly any study of the efficiency factors in business.

Efficiency is interlinked with cost. The object behind the attainment of efficiency is the reduction of cost all round. Cost depends upon the availability of raw materials, scale of business, extent of capital equipment and their upto-dateness, utilisation of byproducts, market limitations, etc. In this respect the warning given by the Balfour Committee on Industry & Trade twenty years back remains valid even today. The Committee argued that it must not be supposed "that because capital equipment is of great importance to industry, it is necessary and desirable to equip all...industrial undertakings, regardless of costs or market limitations with the most upto-date plant; or that because large scale production makes for certain forms of efficiency, all small scale undertakings should be incited or compelled to combine. The history of recent years furnishes many examples of industrial concerns which were misled by the abnormal experience of war conditions into embarking on elaborate schemes of new equipment or amalgamation without due reference to commercial cost and market limitations." The warning is valid even to this day when great economic changes are lying ahead and the same mistakes are likely to be committed. At the same time the need for reducing commercial costs so far as practicable and attaining efficiency was at no time greater than it is today, particularly in backward economies where the scope for mistake is not only great but, if committed, would involve disaster.

To-day in advanced countries, administration of business is regarded as a science and the aim of every business man is to develop it on scientific lines. There has also been a functional division of organisation. This aspect which has received emphasis in western countries after the first great war is practically neglected in India. Efficiency is also connected with the size of the firm. Some businessmen have of course denied the existence of any limit to expansion of business; but, as will be seen later, beyond a certain limit only very few firms are being run with efficiency while below a certain limit, the firms are in a submarginal condition. Only the firms between these two extremes are the most successful ones. Hence this may be regarded as the optimum range in which most successful concerns are working.

After the first great war, a new feature was introduced which is known as rationalisation or "efficiency systems." Originating in Germany the movement spread to the U. S. A., France and Belgium and to some extent to Britain under the stress of depression when it was felt that some efficiency system or other should be adopted in order to reduce costs of production. Efficiency systems however were not uniform. "In America, highly prosperous conditions in heavy industries before the war enabled plant to be renewed on an elaborate scale. There was no hesitation in scrapping less for more efficient installations wherever investigation showed this to be desirable. In continental countries, Germany pursued a policy of currency inflation and equipped industries with up-to-date plant. In France and Germany, currency depreciation assisted the rebuilding of destroyed factories in war areas and their equipment on most modern lines." (MacEwan. *Overseas Trade & Export Practice*). In this country, rationalisation has mostly taken the form of exploitation of labour only, while other aspects have remained practically untouched.

Efficiency is also linked up with the working capacity of the workers. This aspect of the problem includes on the one hand a study of industrial psychology and various problems connected therewith, of working and living conditions, and on the other, a study of such factors as systems of wage payment, future prospects of betterment. It is indeed tragic that the so-called scientific management has, in fact, proved to be less scientific so far as management is concerned and greater emphasis has been laid on

the exploitation of labour. This is one of the reasons why trade unions in every country have opposed scientific management and rationalisation. India is no exception. And yet these have revolutionised the industrial systems in the west. It is, therefore, essential to study, as a part of the aspects of efficiency, the repercussions of these new devices on business, particularly, with reference to labour.

A study of efficiency is no less essential from the standpoint of distribution. Kennedy (*Profits & Losses in Textiles*) points out that the most significant factor to-day is the economy of large scale merchandising and selling. By marketing is to be understood the entire system of distribution and finance of distribution, and efficiency is no less essential in this aspect of business. But unfortunately, this aspect is most neglected in this country. Finance of distribution, is also in the most disorganised state partly owing to the lack of coordination in different parts of the banking structure of this country and partly due to the overcautious policy of the Reserve Bank of India for which it has not yet been possible to organize and coordinate the different elements in the Indian money market.

No less important from the standpoint of efficiency is general and technical education. It is admitted that what India suffers from is the lack of personnel suited for trade and industry. Since business is everyday coming into more and more scientific lines, the utter disregard or neglect of education as a factor in efficiency is to be deprecated. The inadequacy of commercial education has been indicated in my *Indian Business*. The position of technical education is no better. This is a direct responsibility of the state. Other factors indirectly connected with education are scientific and industrial research and industrial art which are very much neglected in this country. Scientific research should be "strategical" in nature and not "tactical"; in other words, there should be "the search for new products and processes, or the investigation of fundamental laws", rather than "the improvement of results obtained from a given process." India's position in matters of scientific research connected with industries is extremely precarious and her dependence on the results achieved in foreign countries, which are adopted in this country too late, is deplorable. No less important is industrial art which also is in a very undeveloped

condition as yet in this country. Industrial art is important from the standpoint of distribution. The Tariff Board on Cotton Textile Industry pointed out as early as 1927 that diversification of production has considerable importance in strengthening the competitive position of the industry. "In view of the vital importance of fine design and workmanship in maintaining and enhancing the reputation and attractiveness of many classes of...products", it is essential that, for the sake of efficiency, this most neglected aspect should receive the careful attention of the industrialists.

Last but not least in importance is business statistics for furthering business efficiency. In advanced countries, statistical materials are available from three sources, viz., individual firms, industry as a whole or trade associations and official sources. Since the interests of these three are interlinked, the figures compiled and interpretations given thereto are more or less accurate and most often not exaggerated. In this country all statistical materials available come from official sources and, till recently, because of absence of cohesion between official standpoint and national interest, official statistics were most often exaggerated, over and above their inherent inaccuracies. Individual firms in this country are hardly interested in this, and those few who have them scarcely make them available to the public. Only some of the Trade and Millowners' Associations have in recent years started the publication of statistical information; but they are partial, covering only the member-concerns, and possibly exaggerated in the opposite direction. These, along with official statistics, are the only statistics available in this country. Three sets of statistical information are essential for business efficiency. First the data should be so compiled as may help all concerns in the industry in preparing their plans for the future. Secondly, the data should be of help to those in each industry who are in charge of its guidance for conducting the enterprise with efficiency and profit. And thirdly the data should be available to the government, either by voluntary arrangement or compulsory requirement, so that it may supply the industrial and commercial world with necessary information and guidance and provide the various organs of government and economic and statistical observers with materials on the basis of which they can form a sound judgment regarding the present, compare it with the past and formulate principles for the future.

The above factors governing efficiency should not be something rigid, but should be flexible so that they may adjust themselves to efficiency. In other words, they should have "mobility which is "the very breath of life" of modern business. Business tactics are undergoing constant changes. If business is to maintain its competitive capacity, it must be sufficiently responsive to alter itself in accordance with these changes. This mobility is very wide in its scope and includes factors material and human, organisational and technical. This aspect has been aptly summarised by the Balfour Committee in *Factors in Industrial & Commercial Efficiency* in the following words:

"The vitality of modern industry, like that of an organism, is measured by its power of response to external stimulus and of self-adaptation to modified environment. 'Mobility' does not imply incessant or purposeless movement or change and may be consistent with a high degree of stability and complexity of structure. But it does imply the power of spontaneous reaction to changes in economic conditions, and of internal modification and rearrangement to meet such changes. This is true both of the material and the human factors, of methods of business organisation and of relations among classes, as well as of the personal skill, enterprise and leadership which individuals bring into the common stock.....

"It is therefore a matter of supreme necessity in this period of rapid and insistent flux and transformation to maintain unimpaired the qualities of initiative and flexibility of temperament, the power of readjustment and adaptation, and the capacity for free and willing co-operation among all the partners in production and distribution. Any waning of these powers could only mean an increasing rigidity and ossification of economic structure, and a progressive enfeeblement of its vitality, for which no measure of external support or defensive organisation could compensate."

It is to these various aspects of efficiency that we are going to devote our attention in the following chapters.

CHAPTER I

COST AND EFFICIENCY

RELATIVE IMPORTANCE OF COST-ITEMS

The consideration of cost in a study of efficiency is of great importance. For, while prices of particular commodity, under a regime of free competition, tend to equality, the same cannot be said with regard to cost. "On the contrary, costs even within the same industry tend to an infinite variety, corresponding to differences among the competing undertakings in respect of every kind of industrial advantage—geographical situation, lay-out of premises, efficiency of equipment, organisation and personnel. Moreover, these differences, so far from being removed by competition, may even tend to become accentuated, inasmuch as the less efficient or well-equipped undertakings, while naturally lose trade to their better-equipped competitors, are forced to spread their overhead charges over a reduced output, thus further enhancing their costs and weakening their competitive position."

The first thing in our study of efficiency is to understand the relative proportion of different cost-items, viz., raw materials, wages and salaries, power and fuel and other items. The importance of these cost items in different industries is not the same but varies widely. Thus in cotton textile industry, the cost of raw material represents a large proportion of the cost of finished product. Thus before the war the cost of raw cotton was about 76 pies per lb. of cloth or 40 p.c. of total works costs while the average manufacturing cost amounted to 115.5 pies per lb. of cloth or 60 p.c. of the total works costs. The distribution of manufacturing costs in cotton textile industry is shown in Table I. In iron & steel industry, the gross expenditure on various cost-items was as follows:—
(In Rs. lakhs).

	1925-26	1933-34
Labour	148.4	148.4
Fuel	113.0	150.7
Ores, Fluxes, etc.	52.4	92.0
Total	395.0	515.1

Since the outbreak of the war, partly due to an all-round increase in prices and partly due to heavy expenses incurred by the Tata Company for improving the conditions of labour, the cost items, specially labour, have increased enormously. Taking 1939 as 100, the cost index in Tata Iron & Steel Co. in 1947-48 was as follows:

Wages	...	297
Coal	...	265
Iron Ore	...	172

257

In sugar industry the cost of manufacture is divided into three parts—raw materials, manufacturing expenses and overhead charges, the proportion of costs incurred on these being roughly 52.58 p.c., 25.49 p.c. and 21.93 respectively. Among the manufacturing expenses the largest item is spent on salaries and wages, which being the most important item, efficiency in production depends to a considerable extent upon the efficiency of technical staff employed. In paper industry it is very difficult to allocate different items of cost in correct proportion mainly because of the fact that the process of manufacture of pulp and paper being continuous, many cost-items are common to both. Thus, the allocation of proportions of common items, like power and fuel, and overhead charges, cannot be accurate. Another difficulty in allocating cost in Indian paper industry is that the different mills do not employ the same process of manufacture and hence use different proportions of raw material. The materials used for the manufacture of paper include primary materials like grass, bamboo, rags, etc., auxiliary materials like lime, chemicals and dyes, consumable stores and generally all other raw materials, and purchased pulp. That the industry has been able to increase its efficiency is perceptible. In 1924-25 the works-cost of manufacture of one ton of air-dry unbleached pulp based on the experience of one mill was Rs. 227.47. By 1930-31, the figure came down to Rs. 196.65 and by 1936-7, to Rs. 123 on an average for four mills. Apart from the reduction in the cost of raw material, various economies have been effected in the use of chemicals, power and fuel, labour and supervision, and repairs and maintenance.

Having considered the relative proportion of these different cost-items in some of our industries we should consider their present position and the possibility of increasing their efficiency.

RAW MATERIALS

As is well-known, India is one of the most important cotton-growing regions of the world. It is all the more important because while a considerable portion of the produce is consumed internally, a considerable portion is also exported. The classification of our cotton according to trade description is indicated in Table II. In judging the quality of cotton, staple length is very important. Cotton is roughly divided into short and long staple. "By custom the line is drawn at $1\frac{1}{8}$ "; cotton of that length and longer being known as long staple, extra staple, staples or simply staple cotton. The tendency in recent years has been to acknowledge an extra value in any cotton of one inch or more in length and to speak of that which is below one inch as short staple." From this stand point, India is a country producing short-staple cotton. In recent years, of course, the cultivation of long-staple cotton in India has increased. During 1933-34 and 1934-35, the production of long-staple (over one inch) cotton was 24,000 and 51,000 bales of 400 lbs. each respectively. In 1944-45 the estimated area under cotton cultivation was 14.8 million acres, of which 7.8 million acres were used for the cultivation of improved varieties of cotton. A more scientific classification of cotton has recently been adopted by the Government of India on the basis of the recommendations of the Commodity Prices Board. The following changes have been introduced:

(1) A new classification in cotton has been introduced, viz., short-staple (Deshi) Cotton which will form the basis for all short-staple cotton. The staple length of this basic cotton is $5/8$ ". The basis until now was $3/4$ " Jarilla and the rates for short-staple varieties until now were based on the rate for Jarilla. This was not quite scientific, for all cotton of $11/16$ " and below was brought under one group and treated as such for purposes of deciding the prices, irrespective of their merits. The total quantity of cotton thus grouped was substantial and the disadvantage suffered by growers of short-staple cotton as a result of this broad generalisa-

tion was therefore considerable. The introduction of a new basic cotton for short-staple varieties drawn from their own "family" is certainly more scientific and will place all short-staple cotton in a better perspective. Thus 11/16" staple will not be termed merely short-staple cotton, but 1/16" above the basic short-staple and the rate for it will accordingly be quoted so many rupees "on" the short-staple basic cotton.

(2) A separate classification has been introduced for Vijay Cotton (Broach group) and cottons classed with it. Hitherto Vijay Cotton was treated on a par with 3/4" staple Broach though its staple length is in fact a little longer. The worst sufferer of such classification of the Broach variety was the grower.

Cost for raw material is closely connected with the yield per acre. In this respect it should be noted that in this country while the yield per acre of the Deshi variety is the lowest, the maximum average yield per acre being 101 lbs., that of long-staple cotton like Americans, Broach and Cambodias is much higher, and although they fall much below the average yield per acre in America, they have shown a distinct improvement and it may be expected that if proper investigations are made the yield may increase still further. The estimated percentage of production to total yield, the yield per acre of Indian Cotton by varieties and total yield and yield per acre (in lbs.) of cotton in America are shown in Tables III, IV and V.

It is wellknown that a greater part of cotton produced in this country is consumed by mills in this country. Before the war India grew 25 million acres of cotton and now she grows only 14 million tons, a result brought about by the substitution of non-food-grains cultivation by food-grains cultivation under the Grow More Food Campaign. This will affect India's position as the second largest producer of cotton. This compares unfavourably with the situation in America where it has been decided to increase her cotton area by 50 p.c. Besides, America subsidises her exports with 4 cents per lb., now reduced to $\frac{1}{2}$ cent, whereas India penalises it by Rs. 40 per candy or 2 cents per lb. If this situation continues, it will be difficult for our cotton to maintain its competitive efficiency in foreign markets. Even in the Indian market, the political division of the country has created a problem. For, while the major section of the industry is situated in India, long staple cotton

is mostly cultivated in Pakistan. This is another headache for the Indian industry. In the past schemes for the development of cotton were framed and implemented on the belief that India would always be a single country and as such West Punjab and Sind were the greatest beneficiaries. In fact, these areas were relatively more suited for growing long-staple and better varieties of cotton. The consumption of Punjab and Sind cotton during the past three years is shown in Table VI. Thus at present India is dependent on Pakistan for its supply of long-staple cotton. In some quarters this is taken with some uneasiness and it is argued that India should attain self-sufficiency. In prewar years the present Indian Union territory including Hyderabad state devoted about 20 million acres to cotton which turned out roughly 4.2 million bales. For 1945-46 the corresponding figures were 11½ million acres and 2.5 million bales. Under existing circumstances India will have to devote at least another 4 to 5 million acres to the cultivation of cotton in order to reduce its dependence on Pakistan. This may affect adversely the existing food problem. Besides, the next problem is whether there is sufficient land of right type where we can grow Pakistan varieties or other substitutes. So far as the first problem is concerned, it should be noted that the cotton acreage has been sacrificed without any gain in food acreage, or in any case the production of food has not increased in proportion to the loss in acreage under cotton. Further, the reduction in the output of cotton has necessarily resulted in a serious shortage of cotton seed available; for, against each pound of lint 2 pounds of seeds were available and these were valuable as cattle feed. Hence it is essential that these areas should be recovered from food grains cultivation and the latter should be increased by intensive farming. Regarding the second question, viz., whether sufficient land of suitable variety would be available, Sir Datar Singh feels quite optimistic, and this is supported by the recent investigations by Dr. Panse and Prof. Dastur. The former visited the C. P. & Berar, Dhar, Indore, Gwalior and as a result of his visits the C. P. Govt. have submitted a scheme for the immediate extension of Buri and Cambodia over an area of about 100,000 acres. Prof. Dastur visited Mewar, Mysore, South India and part of Bombay Province. In so far as Mewar State is concerned he has reported that there are great possibilities for growing long-staple cottons there and

that the Agricultural Department hopes to increase the area under Americans to about 1,500 acres during the ensuing season. In Mysore it is proposed to increase the area under M.A.V. upto 15,000 acres. As regards Bombay, there is not much scope for replacing short-staple cottons with long and medium staple-cottons as the cotton area in the province is already almost completely covered with improved types. It has been proposed by the sectional Sub-Committee of the Indian Central Cotton Committee that the proposed increase in acreage should be distributed among different long and medium-staple varieties as follows:—

				(Acre in laks)
1.	Surti	...	...	3
2.	Kumpta Jayawant (including the states of Sangli, Miraj, Jamkhandi & Savanur)	...	...	7
3.	Cambodia (including Co. 3 & Co. 4)	...	...	2.5
4.	Hyderabad Gaorani (including Gaorani 12)	...	...	4.0
5.	Buri (including Cambodia)	...	...	2.5
6.	Parbhani American	...	...	0.5
7.	Jarilla or Similar varieties like H420 & verum			
			(Khandesh)	5.0
			(C. P. & Berar)	7.0
8.	Broach-Vijaya (including Baroda State)	...	...	7.0
9.	Dholleras (Bombay Province, Baroda, Kathiawar State)	...	...	3.2
10.	Westerns & Northernns (Madras Province)	...	...	2.0
11.	Karunganni (Madras Province)	...	...	0.5

As already said, in cotton textile industry, the cost of raw material is the largest single item. In this respect two things are important, viz., market price of cotton and method of purchase of cotton. Price again depends on two factors, quantity and quality, of cotton produced at home and imported from abroad. Table VII shows the acreage under cotton cultivation, total annual yield and mill consumption of cotton in India. Turning next to quality, it may be noted that the inferiority of Indian cotton is often too much exaggerated. As Arno S. Pearse says in his *Report on the Cotton Textile Industry*, "Indian cottons have still a bad reputa-

tion, due to the condition in which they reached Lancashire at the time of the cotton famine...The very fact that the yarn made for 2,300 automatic looms which are working in South India is spun entirely from Indian cotton should be an object lesson of sufficient value to induce spinners to make a new trial with Indian cottons. One English spinner informed me that he was spinning experimentally 36's twist out of Indian cotton without any admixture of other cottons." Since then the quality of our cotton has considerably improved and so also the yield per acre has gone up; but even our long-staple cotton suffers from some defects in quality; for, some of it is uneven in staple and lacking in strength and sometimes it is rendered unsuitable by admixture with short-staple cotton before it is brought to the market. In spite of these defects, the area under cultivation of long-staple cotton has increased and so also the consumption of this cotton by Indian mills. Even before the war, mills in Ahmedabad have been able to make substantial progress in spinning yarns upto counts of 50's and 60's required for meeting the demand of finer qualities of cloth which hitherto has been largely met by imports from abroad. In Bombay also some mills are producing larger quantities of high grade yarn and cloth. The progress in this respect in other parts of India is not worth-mention and whatever progress took place before the war has been retarded during the war when the production of coarse and standard cloth assumed greater importance. A comparative study of the yarn production in India by counts and the progress made in this respect can be obtained from Table VIII. It will be seen that yarn production above 40 counts has made considerable progress since the close of the first great war, and particularly since 1930-31.

The cost of production in cotton textile industry depends not only on the quantity produced or quality offered but also to a great extent on the price at which cotton is purchased. We know that in this industry, 40 p.c. of the total works cost has been covered by raw material itself. The importance of price of raw material as a factor affecting cost and efficiency increases all the more because of the fact that with the increasing use of long-staple cotton, cost of raw material will go up increasing, as the price of long-staple cotton is bound to be much higher than the price of short-staple cotton. Thus experience in England shows that

“materials...have formed rather more than 70 p.c. of the cost of spinning American cotton and wages and salaries roughly 13 p.c. In the spinning of finer counts from Egyptian cotton, materials accounted for from 70 to 75 p.c. and wages and salaries between 16 and 18 p.c.” Where raw material constitutes so large a part of total expenses of production, not only the price ruling at a particular moment but also the course of prices are important. In our country, since 1933, price of cotton in hedge contracts has not been stable but has fluctuated from time to time. Of course, there was no long range fluctuation during 1933-38; but what the manufacturer is more concerned with is not so much the long range fluctuation as day to day fluctuation. During the period under review, the price of cotton, broadly speaking, showed an upward tendency from the middle of 1936 and this tendency continued right up to the middle of the year 1937 after which there was a considerable decline. In foreign market also, so far as price is concerned, Indian cotton has always been in a favourable position throughout the period.

No less important is the method of purchase of raw material in case of an industry where cost of raw material plays such an important part. It is well-known that two methods of purchase of cotton prevail in this country, one in Bombay market and the other by an increasing number of mills by sending their own agents to the cotton-growing districts to buy cotton on the spot and arrange for it to be ginned, pressed and transported to the mill. Both the practices have got their strong and weak points. But the latter practice has greater defect in view of the fact that outside the Bombay market, there is no organised system of hedge contracts and therefore transactions tend to become speculative in character. Even in Bombay market, certain differences of opinion cropped up regarding the working of the hedge contract system. Be it recalled that upto the year 1918-19 the Bombay Cotton Trade Association was the authoritative institution for all transactions regarding the supervision of spot and futures businesses. But as a result of heavy speculation that prevailed during the first great war in both spot and futures transactions, the Government established the Cotton - Contracts Board for the regulation of the market. In 1922 the East India Cotton Association Ltd. was started as a private concern and the Government

transferred all the former activities of the Cotton Contracts Board to the newly started Association. Since the Tariff Board reported in 1927, a difference of opinion arose between the Millowner's Association, Bombay and the E. I. C. A. regarding the working of the hedge contract system. The Millowners' Association was in favour of a single hedge contract on the lines of Liverpool which would include most of the cottons of India; but the Brokers' Association recommended for a considerable number of contracts on a narrow basis. But both these Associations admitted the deficiency of their schemes before the Cotton Contracts Act Committee appointed by the Government of Bombay in 1930. For, while the Millowner's Association admitted that the time was not ripe for the introduction of a single hedge contract, the Brokers' Association thought it improbable that the "bazar" would be willing and able to trade in a very considerable number of hedge contracts. Whatever that may be, the consensus of opinion among all sections of trade was in favour of three hedge contracts which would cover the three main divisions into which the cotton of India can be distributed and accordingly we have hedge contracts in Bengal, Broach and Fine Oomra. But then there arose some difference of opinion regarding the broadening of the Broach contract which was neither liked by the cotton trade nor by the East India Cotton Association. Recently the matter was investigated into by a committee appointed by the Govt. of Bombay to examine the question of further control and regulation of forward trading in cotton in Bombay Presidency. The Committee has submitted its Report in April 1947. For checking excessive speculation and corruption, the committee has suggested control by the Government. For the purpose it has recommended that control should be extended to the whole province. So far as hedge contract is concerned there should be only one recognised association, viz., the E. I. C. A. But government may permit transferable delivery contracts in local growths of cotton, not covered by hedge contract, such permission being confined, normally, to not more than one recognised association in each of the three cotton regions in Bombay Presidency. The Committee has further suggested that the Govt. should assume a larger control than at present over all recognised associations by taking power to impose by-laws, by rendering all contracts not in accordance with the by-laws of the recognised associations illegal and also by

providing that it would be a penal offence for any person to organise or assist in organising, or be a member of an unrecognised association. The Committee has recommended prohibition on all option deals. It has also suggested certain fundamental changes in the E. I. C. A. e.g., abolition of the panel system of electing directors though seats on the Board are to continue to be reserved for different interests, reduction of the number of seats reserved for brokers, provision of more seats for the growers' representatives, restriction on transfer of membership, admission of new members without restriction etc. The committee thinks that there should be no provision for trading in a smaller unit than the present 50-bale unit and therefore no separate trading ring for small traders should be organised, as was at one time demanded by the Shri Mahajan Association. Regarding the composition of present hedge contract the committee does not consider that any immediate change in the composition of the present hedge contract is necessary. All the above suggestions are aimed at two things, viz., to check speculation and to help the growers. For, it is well-known that speculation in cotton market has in recent years come to be of a very wild type, almost bordering on gambling. Typical instances of this are options, overtrading, squeezes, bear-raids, etc. The main cause for the abuse of the machinery of hedging is to be found in the lack of discipline in the trade. Besides, the construction of the contract and the system under which it is worked are not perfect. These explain the prevalence of speculation and also the farmer being deprived of the benefit of the futures market. The recommendations of the committee are far reaching, but to some extent defective. Thus regarding the construction of the contract and the system of its working the recommendations are half-hearted. The success of other recommendations will depend upon the vigilance of the authorities in making them effective. The suggestions for effecting changes in the E. I. C. A. are good enough; but how far these changes will benefit the grower will depend upon the type of persons selected for representing the growers. The recommendation for the establishment of regional markets is, however, unfortunate; for these may create fresh avenues for speculation right in the heart of the cotton-growing areas by encouraging straddling and magnifying local upsets. The recommendations regarding the system of working the contracts, arbitration and preparation of

standards are also half hearted and will not go a long way to help the growers.

The raw material for jute industry is wholly produced in this country, India having a virtual monopoly in this respect. In recent years some efforts have been made to find out substitutes and these have to some extent been successful. Of the jute substitutes which have been used commercially in recent years are cotton and paper. In U. S. A. and Argentina cotton is being used for packing sugar, flour, fertilisers, cement, etc., and also for linoleum packings. Cotton makes a more attractive packing medium than jute and such packings are little affected by moisture and have a higher salvage value. Normally cotton is more expensive; but price is not a major consideration where it is essential to make full use of a crop grown locally. Before the war paper was being used on an increasing scale in western countries as a substitute for jute, in particular for packing cement. Synthetic fibres have of course possibilities as jute substitutes, but at present their price is too high to enable them to compete with jute. Thus "Fibro", a staple rayon fibre, is being used for some purposes for which jute was normally used. In Germany before the war a jute substitute known as "*Zell Jute*" was prepared from straw pulp and subsequently from digested wood pulp; but the cost was three times that of jute. Other more important fibres used are *urena lobata*, various species of *Hibiscus* and caroa fibre. The production of *Urena Lobata* was commenced in Belgian Congo towards 1929 and has increased considerably since then. In 1933 exports were about 150 tons, but in 1943 production was as much as 13,000 tons. By improved methods of cultivation, careful study and efficient supervision and guidance with the retling of fibre, the quality has been improved considerably. Until the war, much of the grading was done by jute mills in Belgium. Brazil, Cuba and Madagascar are other countries which have been successful in bulk production of this fibre. In the Union of South Africa the seed of *Hibiscus Cannabinus* is being collected with a view to growing the plant for fibre. It is also cultivated in Madras as an annual crop, while in Bombay, Hyderabad, C. P. and Berar, about 150,000 to 300,000 acres are under the crop, the product being exported under the name of Deccan hemp or Bimlipatam jute. The chief disadvantages of most of the substitute fibres are their

inferior strength and suppleness as also their high cost. For these reasons jute still predominates in the world market. But during the last one hundred years, the price of jute is on the increase, along with increasing demand, as can be seen in the following. (Wholesale Calcutta Price in Rs. per bale of 400 lbs.)

1851	193-14				1933-34				1935-36				1945
	April	July	Oct.	Janu.	April	Jul.	Oct.	Janu.	April	July	Oct.	Jan.	June
14½	59	69	83	85½	25½	29½	25½	26½	31½	36	31	38	79

It will be seen that with the increased demand for the fibre the price of jute has gone up. But then there is a limit to this, which being exceeded, the cost-advantage of jute would disappear. In this respect the levy of jute export duty by Pakistan on jute exported to India for manufacture may be regarded as unfortunate; for, it has unusually raised the price of jute manufacture and if this adversely affects the competitive efficiency of the industry, it would be neither to the interest of the Government nor to that of the grower and manufacturer.

The acreage under jute cultivation has increased during the last one hundred years. Before the second quarter of the 19th century, jute was hardly cultivated except for local use; but since then it has extended very rapidly, and it is exported either raw or manufactured in rapidly increasing quantities. The first shipment of raw jute from India was made as early as the last decade of the 18th century; but it was only in the thirties of the 19th century that the flax and hemp spinners of Dundee began the manufacture of jute fabrics on power loom. Till the end of the second quarter of the 19th century, the Bengal handloom industry had retained its vitality and supplied the European market with manufactured goods, export of raw jute being of secondary importance. But when during the Crimean war, the supply of Russian flax was

stopped, the U. K. began to exploit raw jute as a commercial fibre and from this time onwards, the export of raw jute from India increased. Among other customers of raw jute mention may be made of Germany, U. S. A., Italy and Spain. During the first great war, supplies to Germany were stopped, but recovered after the armistice. The flow of exports continued then till the years of great depression, when it declined, to be revived again from 1933-34.

The partition of the country has created a tremendous problem for jute as also for the jute industry. For, while all the mills, numbering 104, are in India, while most of the raw material, nearly 85 p.c., is grown in Pakistan. According to the final forecast for 1946-47, the total area under jute cultivation was 18.8 lakh acres with an yield of 55.5 lakh bales, of which 13.58 lakh acres with an yield of 40.76 lakh bales are situated in Pakistan. The present yield of raw jute in West Bengal, Cooch Behar, Orissa, Bihar and Assam is therefore only 14.74 lakh bales, while the jute mills at present require about 55 lakh bales per annum and world require considerably more if they worked at full capacity. Thus the problem of ensuring a regular supply of raw material to the jute mills is a pressing one. Besides, as already noted, the levy of jute export duty by Pakistan would adversely affect the competitive efficiency of the industry.

If jute is to retain its position in the world market, it is essential that agricultural efficiency should be increased. The Jute Agricultural Research Laboratories have done something in this respect; but this is not much. Machine treatment for extraction of the fibre has never gone beyond the experimental stage. Efforts should be made, by scientific research, to increase the staple length and quality of jute and to reduce cost by machine treatment of the extraction of fibre. The only measure that has been adopted so far is aimed at not so much towards improving agricultural efficiency as at maintaining the price of raw jute by putting a restriction limit on cultivation. This solves the problem only temporarily. A proper solution would be to increase the agricultural efficiency and thereby secure reduction of costs.

No less important is the consumption of raw jute by the industry. The first jute spinning machine was installed in this country as early as 1855 and the first powerloom in 1859. At first the

quality of jute manufactures was inferior to that produced in Dundee and therefore they commanded only the local market. But this handicap was shortlived; there was a great improvement in quality and hence in competitive efficiency and the export of jute manufactures went up, so much so that the Dundee manufacturers of jute raised a cry against this and brought pressure on the administration for introducing factory legislation in India thereby putting certain disabilities on the competitive position of the Indian mills. But these efforts did not affect exports except during years of depression. Meanwhile the jute industry set its own house in order by removing internal competition when the Jute Mills Association was started with a view to regulate output. From the beginning of the present century the progress of the Indian industry was still more rapid and it was producing an output in excess of that produced in Dundee. Not only the mill consumption of raw jute in India increased; but there was an increased export of jute manufactures which surpassed the export of jute manufactures. The progress of the jute industry in India is shown in Table IX. Recent statistics regarding the expansion of jute looms are now available. In 1938-39 their number was 67939, in 1944, 70870 and in 1947, 71324. It will be seen that the increase in the total loomage of all jute mills in India between 1944 and 1947 has been of a very nominal character; and when one recalls the recurring bouts of overproduction that were a regular feature of the decade before 1939 it is probably a very good thing that there have been no great additions to manufacturing potentials. If we make comparison on an international scale, India's position will be found to be foremost. The last date at which international comparisons were possible was 1940 and this showed that India possessed 57 p.c. of the world loomage and that Germany came next possessing 8 p.c., Great Britain 7.1 p.c., France 5.8 p.c., South America 5.0 p.c., Italy 4.1 p.c., Belgium 2.5 p.c., North America 2.3 p.c., Czechoslovakia 1.7 p.c., Poland 1.3 p.c., and Japan 1.2 p.c.

But there should be no cause for jubilation over the past. For, as already seen, all countries to-day are in search of substitutes. Besides, during the years of war cost items in our jute industry have gone up all round. In a recent report of the British Board of Trade Working Party on Jute a comparison has been

instituted between the British and Indian costs which are however defective. The two sets of costs are given as follows:—

	British Cost	Indian Cost (Estimated)
	Per Ton	Per Ton
Operating Costs (Wages and Overhead Expenses)	£37.16.5d.	£20.10.0d.
Capital Charges	£10.1.11d.	£ 7.12.0d.
Conversion	£47.18.4d.	£28. 2.0d.

In arriving at these costs it has been assumed that yarn is spun by the most economical method, i.e., on sliver spinning frames operating double shift 40 hours per week and weaving on a single shift of 45 hours. In calculating costs, Calcutta mills do not generally provide for interest on capital and depreciation; but if this item was included, overhead costs to-day in India would be much higher than British costs. Even if this item is left out, still it is doubtful if many Indian mills can to-day produce 40" 10 oz. hessian at a cost of Rs. 504, claimed for British mills. This state of affairs is due to the inefficiency of our operatives. Thus almost at every stage the number of hands employed is considerably greater here than in other countries. And so long as the Indian wages were low, the disparity did not greatly matter; but at to-day's levels, the superfluity of hands and amount of idle time wasted in an average jute mill is no longer something to be ignored. Thus take the case of weaving. Whereas one weaver normally looks after at least two looms in Britain and on the Continent, in India one weaver, one loom continues to be the accepted practice. The fact is that there is a point beyond which the Indian jute industry cannot be loaded with additional working costs. This will be clear from the fact that in India, in an average mill, the manufacture of a ton of jute yarn on spools absorbs not less than 300 to 350 man-hours; whereas in Dundee 90 man-hours are required with modern machinery and on the Continent they are as low as 50 man-hours. Over and above has come the increase in the cost of raw material after partition. The main advantage for which jute held a monopolistic position was on account of cost. But as is seen above this has disappeared and unless efficiency of labour is increased by increased mechanisation, rationalisation, standardi-

sation of products and reduction in the cost of raw materials, the competitive efficiency of the industry will suffer.

Another industry linked up with agriculture is sugar. Although sufficiently old, the industry has made enormous progress only during the last two decades. Before 1930, India no doubt was one of the greatest producers of sugar; but she was not self-sufficient. Since 1930 the industry has made enormous progress so much so that the peak output was received in 1939-40, when 145 mills produced 13,73,400 tons of sugar. In 1946-47 these figures were 146 mills with an output 10,66,000 tons. Although this development seems to be enormous, and although the industry was suffering from over-production before the war, this progress cannot be regarded as sufficient in view of the low per capita consumption of sugar. Thus while in Britain the per capita consumption of sugar in 1938-39 was 112 lbs., in U.S. A. 103 lbs., and in Australia 114 lbs., in India it was only 20 lbs., per head. This is a very poor figure. With the increase in economic prosperity of the people and an uplift in their standard of living, the consumption of sugar is bound to increase and therefore there is enough scope for the expansion of the industry with the general economic progress of the country. Besides, the industry being dependent on agriculture, it has been of great help to a large section of our people—nearly 20 million—who have taken to the cultivation of sugar cane. An idea of total acreage under sugar cane and average cane production per acre can be had from Table X. It will be seen that the cane acreage has shown considerable increase from about 30 lakh acres in 1931 to 45 lakh acres in 1940-41. The varieties of cane, according to the sugar cane expert, occupy 90 p.c. of the total acreage. The average yield per acre was 12.3 tons in 1932 and improved to 15.6 tons in 1936-37. The improved position compares with 47.3 tons and 52.5 tons respectively for the Hawaii islands and Java which enjoy certain natural advantages. It should be noted that Madras, Bombay and a few other areas have been able to show much better results than the U. P. and Behar. It is true that it may not be possible to reach the excellent results reached in Hawaii islands and Java; but then there is no doubt that there is much leeway to be made up, particularly so when the cost of cane has gone very high during the past few years. In respect of recovery of sugar from cane our progress

must be regarded as sufficient. The maximum recovery percentage has advanced by slow moves from 10 in 1931-32 to 13.35 in 1942-43. The subsequent two years showed a tendency towards a small decline. The percentage recovery for Java for 1939-40, the latest year for which information is available, was 12.3. But the greatest problem for the industry is the cheap and sufficient supply of sugar cane. In view of insufficient supply of sugar cane, it is not possible to give full employment to the productive capacity of the industry; and in view of non-attractive prices, the cultivation of sugar cane is not being under-taken on a very much extended scale. Hence it is essential that effort should be made to increase the yield per acre by the introduction of improved variety of sugar cane. The recovery percentage has no doubt increased; but the yield per acre is still very low in this country; and yet "it is a definitely proved fact from the work of the Indian research stations and also from the experience of those factories which grow their own cane that high yields are possible." The present poor yield is often attributed to the separation of agricultural side from the manufacturing one. This state of affairs is peculiar to India and has no parallel in any sugar-producing country of the world. "The manufacturers in India generally do not produce the raw material, viz., cane, as they do in Java and other countries from their own extensive plantations round about the factories but they depend on a large number of agriculturists with small holdings of land independent of each other and working without any definite system, industrious but lacking in capital, in resources and in scientific knowledge and consequently incapable, in the absence of any guidance either from the governments or from the factory owners, of making use of modern up-to-date and scientific methods of efficient cultivation, crop rotation, manuring, etc." Experiment carried on in this direction in certain areas in western India have yielded promising results. The attainment of agricultural efficiency is all the more important nowadays when costs all-round have gone up. Thus, e.g., the cost of manufacture has been doubled owing to the paucity of sugar cane and shorter crushing season and also increased cost of material. Again, during the war the industry did not work to capacity for want of replacements and additions. The price of sugar cane which covers nearly 60 p.c. of the cost of sugar has gone up four

times its prewar price per md. in U. P. and Bihar. Wages have also increased. Finally the lack of manure and other facilities and assistance to cane growers have resulted in a yield of 225 and 270 mds. per acre as compared with 420 mds. per acre estimated by the Tariff Board in 1938. Apart from the improvements in above factors, it is essential that the improved variety of sugar cane should be cultivated more and more. It is true that this will increase the cost slightly; but since the yield increases enormously, the profit from improved variety is very high, as is shown in Table XI.

India is one of the biggest producers of oil seeds. But it is unfortunate that a major portion of the produce is exported. Only a very small portion is consumed by the oil industry in this country and the export trade in oil and oil cake is very small. Since 1932 as a result of the Ottawa Trade Agreement, the export of oil from India, particularly to the U. K., has considerably increased; but in subsequent years owing to international complications, their export came down.

The development of vegetable oil industry in India depends on the development of some other industries, e.g., soap industry, paint industry, manufacture of compound lubricants, manufacture of butter and ghee substitutes, manufacture of tallow substitutes, candles, oilcloth, stearine and glyceline, etc. In recent years some of these industries have been started. But even then India imports a large quantity of these articles every year. Even where production is undertaken inside the country, the production unit is very small in many cases. As for example, in the soap industry while there are some big concerns like the Godrej Soap Factory of Bombay, the Tata Oil Mills Co. Ltd., the Bengal Chemical & Pharmaceutical Works of Calcutta, the Himani Works of Calcutta, the Kerala Soap Factory of Calicut, The Mysore Govt. Soap Factory, yet there are many small concerns, some of them using no machinery worth its name, and some being, truly speaking, on cottage industry scale. Of other products mentioned above, they are either totally imported or produced on a very small scale in this country. Thus the paint industry in this country is still an infant stage and the main obstacle in the way of its development is the existing prejudice against Indian productions, which, if removed, would lead to the development of the industry. In matters

of compound Lubricants, India is at present dependent on imports which is bound to increase with the increasing industrialisation of the country unless demand is met by internal production. Similarly every year India imports a large quantity of oilcloth, butter and ghee substitutes, tallows, etc. The last mentioned article is so very essential for textile mills and every year India imports about twenty-two lakhs of rupees worth of tallows from Australia and New Zealand. India produces a small quantity of candles, the rest of the need being supplied by imports. If all these industries are developed in this country, that will give rise to parent industry, viz., vegetable oil industry and thereby facilitate the consumption of a large proportion of oilseeds that are every year produced and exported from India and imported in the form of above products. This is a very weak link in our industrial structure, particularly so when we see that for such industrial essentials like compound Lubricants, tallows, etc., India is to-day dependent on foreign supplies. Yet India has the necessary equipment for the development of these industries.

In matters of the supply of paper India was till recently too much dependent on the supply of woodpulp from outside sources. Since the thirties, however, the import of woodpulp is gradually declining, as can be seen in Table XII. It will be seen that if properly exploited, India is not lacking in raw materials for the paper industry. In fact there are so many materials, e.g., bamboo, jute and hemp waste, various grasses, sugarcane bagasse, rags and waste papers, etc., which may be utilised for the purpose. The dependence on imported wood pulp creates an element of uncertainty in the industry, and if the natural scarcity of wood as forecast by some authorities be accepted as true, then it must be admitted that the increasing scarcity of wood is sure to raise the price of wood pulp and to force the industry to change its basic material.

So far as the supply of bamboo is concerned, India is in a very happy position. It has been found that the supplies of bamboo in areas where other conditions were favourable for exploitation were sufficient to meet the needs of all paper mills in India and to leave a surplus from which an export trade in pulp can be developed. The estimate made by the Tariff Board (1938) regarding the quantities of bamboo available in seven provinces

and three Indian states is shown in Table XIII. It will be seen that the quantity of bamboo available from surveyed areas in India exceeds 6,00,000 tons. Additional supplies are available from non-surveyed areas for which no figures are available at present. Thus it is clear that there is an ample reserve supply available for an extension of bamboo pulp manufacture. The species of grass so far available for the manufacture of pulp is sabai grass which is grown mainly in the U. P., Bihar, Orissa and the Punjab. The available supply was estimated by the Tariff Board of 1931 at 50,000 tons per annum, apart from a considerable quantity in Nepal. About other materials no exact estimate is available; but it may be said of them that their supply is by no means negligible, particularly so of bagasse, now that the sugar industry has developed enormously. Even in India there is the possibility of the manufacture of wood pulp. Thus deodar and pine are of considerable importance among soft woods and the total area under coniferous species, according to an estimate of the Tariff Board, amounts to approximately $3\frac{1}{2}$ million acres. But unfortunately no action has so far been taken by the Government either to increase this area or to explore the possibilities of developing new supplies of coniferous wood. Thus there is no doubt that sufficient quantity of raw material is available inside the country, both for present and future requirements and although India is not as yet producing bamboo pulp which is in excess of internal requirements and export trade in the same has not developed, yet there is no doubt that "if Indian bamboo pulp can be produced sufficiently cheaply to compete with chemical wood pulp, a market for it may be found in Australia, New Zealand and Japan, all of which countries import considerable quantities of chemical pulp, even if export to Europe is found to be impracticable."

In the iron and steel industry, the principal material in use is iron ore. There are four types of iron ore available in India—magnetite, laterite, clay ironstone and hematite. Of all these, the most valuable iron ore in India is the last mentioned one and is available in what is known as the "Iron Belt" which is situated in Singhbhum and Orissa. The quality of this iron ore is the best and according to expert estimate, it contains not less than 60 p.c. of iron. According to Dr. C. S. Fox of the Geological Survey, "Both in quality and quantity, these ores are thought to exceed

any other ores of the same kind, including the Great American occurrences of Minnesota, Wisconsin and Michigan. "The result of this high iron content of Indian ore has been the low cost of pig iron which requires less ore and less coal. According to the Tariff Board, this high iron content of Indian ore has given the industry an advantage to the extent of about Rs. 8 per ton of steel over the continental countries. It is of course true that the low phosphorous content of Indian pig iron has rendered the utilisation of the Basic Bessemer Process impossible in this country; but "the advantage possessed by the Indian industry in the low cost of its pig iron is...sufficient to offset the economy obtained on the Continent by the use of the Basic Bessemer Process." It was the definite conclusion of the Tariff Board that "from the point of view of natural advantages, we see no reason to assume that India is under any handicap as compared with continental countries in the manufacture of steel."

In the match industry, India has a sufficient supply of wood for the manufacture of splints and match boxes. It was estimated by the Tariff Board that the supply of match wood from India and Burma would on the average be sufficient for the manufacture of 8 million gross of matches, and the Board indicated further the possibility of increasing the supply of wood by undertaking plantation. It is of course true that aspen is not grown in India but then "it is a peculiarity of the match industry that no country in which matches are made is self supporting in regard to all or most of the raw materials required."

The cement industry in India possesses natural advantages in an abundant and easily accessible supply of all the raw materials required. Limestone of excellent quality and also suitable clay are found in large quantities in many parts of the country and in close proximity to railway lines. Gypsum, the only other raw material needed for the purpose is also available inside the country. It is of course true that it has to be brought to the factory from long distances; but then the quantity required is very small, not being more than 5 p.c. of the cement output.

The glass industry in India is largely of the soda lime variety and for its raw materials depends principally on silica sand, boric oxide, soda ash, salt cake and lime. The Indian sand of the best variety which is to be found in U. P., compares quite favourably

to the sand available in Europe and America. The inferior quality of sand available in other parts is quite suitable for the manufacture of the inferior variety of glass. Another material Borax which is used for producing Boric Oxide is not produced inside India but has to be imported from Tibet. The nearness of Tibet can naturally be regarded as an advantage to the industry. Calcium Oxide, another material for the industry, can be produced from limestone, of which supplies are available in abundance almost in every part of the country, and particularly in Katni, and adjacent places in Central India where their supplies are regarded as practically inexhaustible. Other subsidiary materials like Zinc Oxide, Saltpetre, Zinc dust and colouring materials are either available inside or imported; but since they are required in very small quantity, their importance in final cost is very low and these, therefore, do not create any special inconvenience. India has also a good supply of refractory materials which compare favourably both as to physical and chemical standards with British and German fireclays. "As regards cyanite and sillimanite, their presence in India places the country in an exceptionally advantageous position for the development of what are called 'super-refractories' and the deposits of these materials in Singhbhum, Assam and the Rewa State, may enable India to take a leading part in the production of this commodity, incidentally benefitting the glass industry as well." While glass industry is more or less self-sufficient as regards the supply of above materials, as yet she is too much dependent on foreign sources as regards the supply of soda ash and although the quantity of soda ash required does not exceed 25 p.c. of the manufacturing materials, yet the proportion of cost on soda ash in the total cost for raw material account is not the same but varies widely between 30 to 40 p.c. and 70 to 75 p.c. according as the factory is situated in some ports like Calcutta or Bombay or in some up country centre, the cost of transport from the port to the upcountry centre being prohibitive. This deficiency in the supply of soda ash is not due to the fact that India has got no supply of basic materials from which soda ash itself could be produced; on the contrary, deposits of Sodium Carbonate and Sodium Sulphate are to be found in India. With the rise of alkali industry, when these deposits will be exploited, India will have a sufficient supply of this vital material for the

manufacture of glass and the present dependence on foreign sources is due not to much to the non-existence of basic materials as due to their non-exploitation. Besides, the factor of cost is often exaggerated; for, the percentage cost of soda ash is a misleading test. "The percentage of the cost corresponding to soda ash was not due to any inherent defect in the Indian industry but due to the other costs, particularly wages, being extremely low, which fact must necessarily lead to swelling the percentages of the other items."

Finally, something is to be said on the manufacture of heavy chemicals. Although a large number of raw materials for the industry are available inside the country, yet prior to the first great war only a few chemicals were produced in this country, and those too in small quantities. During the first great war the industry received some stimulus partly due to the cessation of foreign supplies and partly due to the requirement of chemicals inside the country for the production of war supplies. But the industry fell into difficulty in postwar years owing to the competition from the two biggest combines from Europe. Whatever that may be, as to the supply of raw materials for the industry, India is in an advantageous position except with regard to sulphuric acid which is imported. But this cannot be made a plea for the non-development of the industry. For, in the first place, as the Tariff Board pointed out, "one of the principal grounds on which the chemical industry may establish a claim to public assistance is that it is a key industry" and "in such a case, economic considerations play a secondary part and the question of the cost of production hardly arises." Secondly, if sulphuric acid is not available inside the country, that does not mean that it cannot be produced from other sources. In normal times there is no difficulty in importing it from abroad. In abnormal times the cost factor would surely not stand in the way and it is possible to produce sulphur from other sources, particularly from synthetic ammonia, at a somewhat higher cost. Sometime back sulphur deposits have been discovered in Baluchistan; but the quality is poor. Govt. can undertake a scheme for producing sulphur from Gypsum which is available in large quantity in Sind, Rajputana, Punjab, Himalayan Hills, U. P., and Madras. Be it noted in this connection that in Germany Gypsum has been utilised for the manufacture

of cement in place of lime stone, the sulphur dioxide evolved being reduced to sulphur or converted into sulphuric acid. Dr. Dubey has estimated that a 500-ton cement plant at Dundol near the salt range can utilise the gypsum deposits in the neighbourhood and produce 80-tons of sulphur everyday. Pyrites can also be used for the purpose; but their deposits are small and located in inaccessible areas where cost of production is too high. Their deposits have recently been reported from the districts of Simla, Shahabad in Bihar, and Ratnagiri in Bombay which need careful survey. Recently it has been experimented by the Mysore Chemical and Fertilisers Co. that they can produce, by the contact process, about 25 tons of sulphuric acid per day by the aid of Vanadium Catalysts. Sulphur or sulphuric acid can also be extracted from chalcopyrites and coal. In Singhbhum district the chalcopyrites are being worked by the Indian Copper Corporation for the extraction of copper. It is stated that about 20 tons of sulphur are escaping into the atmosphere every day during the process of roasting of ore. In Canada, Finland and other countries, there are arrangements for converting such sulphurdioxide into sulphur. Further extensive deposits of tertiary coal have been found in Assam which contain on an average 4 p.c. sulphur. Arrangements may be made for recovering this from coal. The other materials which are necessary for combination with sulphuric acid are available inside the country in sufficient quantities.

POWER AND FUEL:

If India is considerably self-sufficient with regard to the supply of raw materials, she is in a satisfactory position with regard to the supply of power and fuel. Fuel may be solid, like coal, liquid, like Petrol, Kerosene, Diesel Oils and Lubricating Oils, and Gaseous. So far as coal is concerned, its total production, consumption and reserves are given in Tables XIV to XVIII. It will be seen that at present coal is used in India for the production of electrical power, running of railways and industries with steam power, for propulsion of ships, for smelting purposes, for industrial consumption and also for domestic uses. A small quantity is used for conversion into gaseous fuel. Other countries have found a more profitable use of coal as a source of raw material for the manufac-

ture of a large number of chemicals of great importance and also for conversion into liquid fuel when mineral liquid is not available. Not only in its use but also in its disuse, there is a lot of change to be effected. For, after all, the supply of coal being exhaustible, it should be utilised in most economical manner. With the present wasteful means of extracting coal and the use of metallurgical coal for non-metallurgical purposes (in 1935, 11.5 million tons of coking coal were raised out of which only 2.5 million tons were used for smelting and the rest for purposes which could be served by other varieties), some experts consider that the coking coal resources of Jharia field will not last for more than 30 years. The Indian Coal Mining Committee reported in 1937 that the reserves of coking coal would last for about 57 years, and that of good quality coal would be exhausted in about 120 years provided the recovery is 50 p.c. With this limited supply, a considerable part of present use is simply misuse. As the National Planning Committee has suggested, the use of coking coal should be reserved for metallurgical industries and that of superior quality coal should be restricted for blending, for hydrogenation of coal to liquid fuel. Besides, coal is used mostly in a raw state or after minor processing which is wasteful from the point of view of the recovery of some valuable by-products such as gas, products from coal tar, ammonium compounds, etc. In Jharia coal-field alone about 30 million gallons of tar is lost. Ways and means should be devised for the use of the inferior grade of coal for many purposes for which at present superior coal is being used and processing of coal should be introduced so that so many valuable by-products may be available. The present methods of mining operation are also defective. Absence of proper planning, working of fragmented mines, present system of ownership of mines, too much extraction in first working, the practice of rotational working, etc., are hampering the efficiency of mining industry.

Our mineral oil resources however are not very encouraging as yet. Of the liquid fuel, under existing consumption standard, which is likely to go up in future, India produces only about $1/5$ th of the requirement. After the separation of Burma and partition of the Punjab, our position with regard to the supply of petrol has deteriorated. According to the N. P. C., substitute liquid fuels may be obtained in the following manner:

(1) Processing of coal by different methods e.g., hydrogenation of low temperature tar and in some cases coal as such, synthesis of liquid hydrocarbons from gases evolved during the gasification of coal, carbonisation of coal.

(2) The utilisation of agricultural products for conversion of the starchy or sugar materials contained therein to alcohol.

Carbonisation of coal has been successfully tried in Bihar. It has already been noted that the present practice of making soft coke is defective in so far as there is a huge wastage of by-products which if recovered from the tar would yield the following per annum:

Motor Spirit	...	...	0.75	million gallons.
Kerosene type	...	...	1.50	" "
Fuel Oil	...	...	3.00	" "
Creosote Oil	...	...	0.75	" "
Ammonium Sulphate	...	10,500	tons.	
Residual Pitch	...	15,000	"	

Alcohol is another important fuel and it is available either from molasses and *mahua* flower or from starchy materials like grains and potatoes. India being one of the important sugar-producing countries, it is possible to produce sufficient alcohol. From surplus molasses which have no market and are simply wasted, it is possible to produce about 15 million gallons of power alcohol. According to the Joint Power Alcohol and Molasses Inquiry Committee (1938), in U. P. and Bihar, it is possible to market power alcohol in these two provinces at the same price as petrol. According to some estimate, it is possible to produce 3.5 million gallons of alcohol from *mahua* flowers and it is also possible to increase the same by extended plantation of *Mahua* trees. India has sufficient supply of starchy materials from which also it is possible to produce power alcohol. According to the N. P. C., "if an all-round increase of only 5 p.c. in the production of cereals and grains be brought about and reserved for the distilleries, the latter would be able to supply the country with about 45 million gallons of alcohol—a quantity which is more than one-half of the total mineral oil production in India."

Turning next to the question of power supply, it is important for the industrialisation of the country as a whole, particularly in those parts where no natural power supply like coal or petroleum

are available in the neighbourhood. This has been recognised in the Bombay plan. "We have deliberately placed the production of power first in the test of basic industries, because we believe that the development of our industries, both large and small scale, as also of agriculture and transport will be determined to a large extent by the development of electricity. The rapid economic development of the U. S. S. R. and Japan during the pre-war period and of Canada during the present war can ultimately be traced to the development of electricity in these countries. In fact in the U. S. S. R., a fifteen-year plan for the electrification of the country, the Goelro, was drafted as far back as in 1920 and it was only when the success of the plan was established beyond doubt that the ambitious five-year plans were put into execution." The Industrial Commission emphasized the necessity for a hydro-graphic survey of India. Accordingly in 1918, the Government of India appointed G. T. Burlow to undertake the work. The work was completed by J. W. Meares. The report indicated that a minimum continuous water power of nearly 6 million kilowatts with a maximum of 13 million kilowatts could be developed. The survey was partial in so far as it excluded practically all great rivers. Since then the Government formed a Central Technical Power Board for carrying out a systematic survey of, and developing, the hydro-electric resources of India. Sometime back the Economic Adviser to the Government of India started collection of electrical energy generated and sold in British India. A recent estimate has placed the available power resources of India to 27 million kilowatts of which hardly half a million have been developed so far. According to the Public Electricity Supply All-India Statistics, the total electrical energy generated in British India by non-governmental supply undertakings in 1944 was 3,841,300,000 units. To these are to be added the production of electrical energy in Mysore (255,000,000 units), in Uhl River H. E. Scheme (60,000,000 units), in the U. P. Ganges Canal H. E. Scheme (49,337,508 units), and in all other native states and government undertakings in British India (50,000,000 units). This makes the total to 4,255,637,508 units as against 25,999 million units in Canada, 141,000 million units in the U. S. A., 55,238 million units in Germany, 30,700 million units in the U. K., 26,714 million units in Japan and 36,400 million units in the U. S. S. R.

Turning next to the cost of generating electricity, the question was considered in 1927 by the Tariff Board on Cotton textile industry which suggested the need for cost-reduction on account of power but saw no immediate possibility of the same. But it was demonstrated by the Bombay Millowners' Association that the mills could achieve substantial savings by installing their own power units instead of taking power from the Tata Hydro-Electric Company. In 1926 the charges varied according to the dates of the contract from .485 of an anna per unit to .725 of an anna. By 1932 a new schedule had come in force "under which the charge consists of a maximum demand charge of Rs. 3.8 a month per kilowatt of maximum demand, which payment entitled the consumer to use 35 units for each kilowatt upto 1,150 kilowatts and 70 units for each kilowatt in excess of 1,150 kilowatts, and an energy charge of .50 anna per unit for the next 200,000 units used each month and .40 anna per unit for all additional units used each month." By 1939, as a result of negotiation with the Tata Hydro-Electric Agencies, Ltd., the power-cost was reduced to .35 of an anna per unit in 1939. The present rate is .32 of an anna per unit.

Although India has vast power resources, there are certain handicaps. India's oil resources are meagre as yet whereas coal resources are concentrated in a few areas. Rainfall takes place only for a short period in the year. Particularly in the Deccan and also in Western India, perennial rivers with sufficient water throughout the year are practically non-existent. Consequently the capital cost of hydro-electric projects in India is very high owing to the seasonal nature of the monsoons and the consequent necessity of constructing big dams during the confinement of monsoon water during hot season. Since capital cost is high, it becomes difficult for those industries which consume a large proportion of power in the process of manufacture to retain their competitive efficiency. According to the information supplied by the Munitions Hand Book, where cost of fuel does not form a large proportion of total expenses of manufacture, electric current at not more than 0.5 of an anna per unit is said to be able to compete successfully with steam. Where, however, cost of production includes a greater proportion of cost on power, as in electro-metallurgical or electro-lytic process, it is necessary that power

should be supplied at a cheaper rate. Similar products are produced in North America or Scandinavia where current can be generated from water power at from 0.05 to 0.1 anna per unit. It has been calculated by the Munitions Board that under the best possible conditions, electricity can be delivered at 0.1 anna per unit in India. This reduction in cost in generating power can be secured, first, by making the fullest use of the installation, thereby raising the "load factor" to the ideal limit, secondly, by securing a better distribution of industries consuming electricity, and thirdly, by bringing about a coordination of the hydro-electric installations with irrigation works, as they have done in some other countries. This coordination can be most effectively done throughout the country—both where there is the system of irrigation by constructing dams and also that by constructing barrages. In the words of the Munitions Board, "Before the construction of new hydro-electric work was undertaken, a whole series of enquiries should be made as to the projected industries, amount of power desired, suitable sites for the generation of power, transport and marketing facilities, and the price of competing coal."

Regarding the last point, viz., generation of electricity by coal and by water power, there is nothing to choose between the two from absolute standpoint. Fuel forms less than 5 p.c. of total expenses in the generation of electricity. Hence it is all a question of availability of coal or water power in the neighbourhood. Costs per unit of electricity generated in various parts of India have been indicated in Table XIX. With improvements in boilers and steam turbines it has been possible to produce much more energy from the same amount of coal. According to the N. P. C., "In England one unit is obtained from 0.9 lbs. of coal at Battersea and in other less efficient stations one unit does not require more than 1.5 lbs. of coal. In India it requires on the average 1.5 lbs. of coal for a unit of electricity." It is true that previously when the consumption of coal was much in excess, the generation of electricity from water power was cheaper. But now with improvements the advantage is neither for nor against coal or water power. The question is however to be considered from the standpoint of availability of coal and its exhaustability. From this standpoint, however, the case for the generation of hydro-electricity seems stronger. It is true that the initial expenses in hydro-electricity generation

will be high; but once the capital investment is written off, the cost per unit will be very low.

Apart from the private enterprises and expansion schemes, the Central and Provincial governments have been investigating various river projects in which the following are ripe for execution: the Tilaya and the Hirakund Dam on the Mahanadi, the Konar Dam Projects on the Damodar, the Bakra Project in the East Punjab, the Tungabhadra Project in Madras, the Rihand Dam in the U. P., and the Mor Projects in Bengal. The following multipurpose development scheme are being investigated into by the Central Government: the Mahanadi Valley Scheme in Orissa, the Damodar Valley, the Kosi Dam Project in Nepal and Bihar, the Narbada, Tapi and Sabarmati Projects in Bombay, C. P., Baroda, Central India and Kathiawar States, the Indravati and Sabri Scheme in Bastar States, the Brahmaputra, Barak and Someswari Rivers Valley Development Schemes in Assam and the Sone Valley Scheme in Bihar, U. P., and Rewa State. A number of projects are also being investigated into by the Provincial governments: the Bhakra Dam Scheme by East Punjab Government, the Rihand and the Nayar Dam Schemes and the Ramganga Dam Project by the U. P. Govt., the Mor Project by the West Bengal Govt., the Tungabhadra and the Ramapada Sagar Projects by the Madras Govt., the Lakshmanteertha Project, the Harangi Project and the Barapole Scheme by the Coorg Administration, the Dochi Dam Scheme by Patiala Government and the Chambal Scheme by the Kotah, Mewar & Indore States

WAGES AND SALARIES

Of the two elements composing the head of cost "wages and salaries", wages are by far the greater in volume and therefore in their effects on the total cost of production. According to the Balfour Committee Report, the factors affecting wages cost are as follows: (1) effect of changes in personnel, i.e., relative proportion of men, women and children, of skilled and unskilled workers; (2) changes in goods produced—changes in style or in the direction of simplification or improvement; (3) changes in methods—not less important in their bearing on wages costs are the improved methods of production, better layout of factories and

works and the more extensive use of the labour-aiding devices, each of which results in a larger output per unit of labour employed; and (4) effect of reduced hours of work. The question whether the reduced hours of labour have resulted in increased wages costs is one on which the evidence before the Balfour Committee shows differences of opinion. On the one hand, it is claimed that the shortening of the hours of work leads to greater efficiency and improved output; on the other, it is asserted that production per hour worked has not increased. Our experience in this respect is not very encouraging. For, in all industries in general and in the cotton textile industry at Kanpur in particular the effect of the reduction of hours of work from 9 to 8 has been the deterioration of efficiency of the weavers who carry on operations in spare hours on a cottage-industry basis. This has resulted only in "fatiguing the weavers and in undoing the benefits designed to accrue from the reduction of working hours from 9 to 8." Partly due to this factor and partly due to the system of giving dearness allowance on mere attendance as distinguished from basing wages and allowances on production, the efficiency of labour in textile mills has shrunk in recent months to 70 p.c. of the normal. We shall take up some of these in connection with our discussion of Labour, Wages and other problems connected therewith. Suffice it so say here that the cost of labour can be reduced either by lowering wages or by increasing productivity. So far as the first alternative is concerned, it is practically impossible; hence the second one must be secured in order to reduce cost. There is already a consensus of opinion in favour of standardisation of wages at a certain fair-wage level. In fact, this aspect is closely interlinked with the question of increasing the efficiency of labour, without which a mere increase in wages costs cannot be maintained by the industry for long. And as regards efficiency, we have yet a much leeway to makeup. Even before the war most of our industries were not maintaining the minimum level of efficiency owing to the inefficiency of the operatives; but at that time their wages were low enough to compensate for this gap; but during the war all costs have gone up, whereas the efficiency has come down due to reasons for which partly labour and partly industrialists and government are responsible. Even if we leave aside the wages-costs, from absolute standpoint also, the efficiency of our

labour even before the war was much less than that in other countries; during recent years, the efficiency has been reduced all the more owing to heavy depreciation of the machinery and go-slow process by labour.

OVERHEAD EXPENSES.

Regarding the overhead expenses we do not possess sufficient material and hence elaborate analysis is impossible. We shall try to appreciate the importance of this cost item with reference to cotton textile industry. The importance of the consideration of overhead charges lies in the fact that some of them can be reduced per unit of output, provided certain changes are introduced in working conditions thereby increasing the competitive efficiency of the industry to that in other countries. In the cotton textile industry it was pointed out by the Bombay Millowners' Association that supervision charges, fire insurance charges, municipal taxes and half the interest charges may be saved by the adoption of double shift system, which would mean, taking the total cost of production, both the manufacturing cost and cost of raw material, a reduction to the extent of 5 p.c. According to some other estimate, the figure of saving is a bit higher. Whatever that may be, the fact remains that some amount of reduction in cost is possible on above accounts by the adoption of double shift system. This not only facilitates the fullest utilisation of the machinery before it becomes obsolete, but also is attended with many economic advantages. According to Mr. Stone's evidence before the Cotton Textile Labour Enquiry Committee, night shift reduces overhead charges. "In addition it has advantages in a country like this, such as the utilisation of a great amount of cotton in the country. It is worked because of the saving it makes, enabling us to sell more, reduce our prices and obtain more markets...We have a certain amount of export trade, and if our supplies increase in the direction of export trade, we must have more night shifts." But there arises an important point for consideration. If double shift system is adopted, what would be its effect on production? Would it decline in both quality and quantity? In that case the competitive advantage secured in one direction would be lost owing to reduced quantity and/or deteriorated quality in the other. No

definite assertion can nowever be made in this respect. While the representatives of labour have tried to cry down the idea, some of the representatives of the employers have asserted that "in the beginning when night shift commences, production is a little inferior because of raw labour, but as soon as night shift settles down properly, there is no difference in the production." It was however the opinion of the Bombay Textile Labour Enquiry Committee—and the opinion seems to be reasonable and supported by some experts in the line—that "if night work ends at or about mid-night, there would be no appreciable difference, either in respect of quantity or quality, between production by day and by night, "and the committee therefore recommended that" all multiple shift systems should be prohibited except the double straight shift, and the three-shift systems under a special licence."

SUNDRY FACTORS AFFECTING COST AND EFFICIENCY.

We have considered above some of the principal factors affecting cost. In the present section a few words will be said about sundry factors affecting cost and efficiency. Thus the question of diversification of production became important in case of cotton textile industry. Of course, under existing cloth scarcity, standardisation rather than diversification has been the rule in cotton textile and jute industries; but before the war, diversification became important for meeting the varied tastes of the customers and there was at that time considerable scope for the expansion of production of bleached, coloured, dyed and printed goods. A scheme was also prepared in 1927 for the establishment of a central bleaching, dying and printing plant at Ambarnath; but the scheme could not succeed owing to the apathy of the government. The Government of Bombay and the Government of India were not ready to render any financial assistance. The question of developing the production of bleached, dyed and printed goods was reopened after 1928 when the Trade Mission to Asia Minor and Africa stressed the point. But nothing could be done in this respect, partly due to Government apathy and partly due to the bad days which had set in for the industry which became busy with its limited resources to effect reorganisation so far as practicable. The Millowners' Association considered the question of

erecting a central bleaching plant by concentrating under one control all the dying and bleaching machines in Bombay which would serve as a nucleus to the further development but they were of opinion that "the cost involved in the removal of individual plants and the difficulty of their adjustment to the requirements of an up-to-date bleaching and dyeing factory would far outweigh any advantage which might accrue." At present therefore a number of bigger mills have got their own bleaching establishments and some of them have got their own plants for printing. With the return of normalcy this aspect of the question will have to be considered again in the light of changed circumstances.

The question of proper utilisation of by-products is of great importance in case of sugar industry. Molasses and bagasse are the two important by-products and the seriousness of the problem can be understood from the fact that "whereas thirteen years ago, when the first Tariff Board reported, the price of malasses was Re. 1/8/3 per md., it has now (1938) come down to about 4 annas per md., and its disposal has become a source of great difficulty for a bulk of the factories." The Tariff Board of 1938 wrote. "If we take into account the large quantities of molasses which bring no return but involve expenditure in their disposal, the average value for the whole of India would probably be not more than 8 pies per md." Generally speaking, the factories which at present realise the best prices and at the same time experience least difficulty in the disposal of molasses are those which have either distilleries attached to them or are situated near distilleries. "At present a small quantity of molasses is used for admixture with tobacco and some quantity is utilised for the manufacture of alcoholic liquors and methylated spirits by about 31 distilleries (1938 figure). A part of it was exported and its import inside the country has practically stopped since 1935. The quantity of molasses for which no use can be found was estimated by the Tariff Board to be "not less than 200,000 tons and may be as much as 250,000 tons." This quantity is wasted annually either being thrown into pits or being allowed to run into water courses, both leading to a menace to public health in the surrounding districts and it is one of the problems before the industry as to how to make the best utilisation of this by-product. "The magnitude of the problem is evidenced from the fact that while the total production

of molasses in vacuum pan factories has increased nearly six times, the total value has fallen to less than half. Existing conditions give no hope of a return to old prices, but the factories can reduce the cost of manufacture if they obtain reasonable price for this." It is of course true that there has been an increase in the production of power alcohol; but it consumes only a small part of the molasses. Hence it is essential that investigation should be directed towards finding some profitable uses for molasses. In Western countries, this by-product is utilised for the production of power alcohol on a commercial scale. In India also the same line of development should take place, particularly so because all conditions to the starting of a new industry are satisfied, e.g., cheap and abundant raw material, sufficient supply of labour and large home market. If this is done, the industry can obtain some profit from this by-product which may help towards reducing cost in the main line and thereby improve the competitive efficiency of the industry.

Another by-product, viz., bagasse, is at present used as fuel. But this is simply wasting a product which can be used for the manufacture of some more profitable product, while the need for fuel may be met by coal and other fuel. The most common use of bagasse in America is the manufacture of paper boards. Paste boards, mill boards and card boards may also be manufactured by the same. An idea of the market in these products in India can be had from Table XX showing the import of paste board, mill board and card board which can be captured if an industry is developed for their production with the bagasse. Other possible uses for bagasse are the manufacture of purified cellulose and artificial silk. Experiments have shown that bagasse ash can be used for the manufacture of glass and bottles. If this industry is developed properly and proper attention is paid to the fullest utilisation of by-products, then not only will the agriculturist and the industrialist thrive but there will also grow-up prosperous distilleries and glass works in this country. Another industry connected with sugar industry is confectionery. At present there are only three factories in Deccan which manufacture confectionery. These are the Ravalgaon Sugar Farm Ltd., the Maharashtra Sugar Mills Ltd., and the Godavari Sugar Mills Ltd. Apart from confectionery, the other by-products include the manufacture of sugar

candy, use of mother-liquor for golden syrup, preparation of dry ice from power alcohol, production of wax from the filter press mud.

A few words need be said on the technical aspect of the industries. It is a matter of regret that Indian industrialism has practically no research to its credit, either in original line or in the improvement of any process. It is of course true that some of the mills having a good financial standing equip themselves with most upto-date plants and equipments; but this is something different from what is known as technological progress. Besides, we are hopelessly dependent on foreign supplies of machinery and equipments, with the result that the industry has to adjust its methods of working to the machinery and stores received. This dependence must of necessity be reduced, and in course of time be completely done away with, if the competitive efficiency of the industry is to increase. The possibility of the development of subsidiary industry in this country is very great, particularly when the market for the same is so widely extended. An idea of the expanding market in machinery and mill work in India can be had from Table XXI.

In the cotton textile industry although the manufacturing process was stabilised years ago, the last two decades and a half witnessed certain changes either for raising the output per worker or for improving the standard of uniformity of the product. Thus when the Bombay Textile Labour Enquiry Committee was investigating, they found that some of the innovations have added to the efficiency of several mills in Bombay and Ahmedabad particularly. But that is no technical progress; it is only the adoption of improvements in designs and in processes to Indian conditions. In a highly organised and competitive industry like the cotton textile industry the need for continuous technical research need hardly be emphasized. Leaving aside the question of technical progress, even the manufacture of machinery utilised in the industry is not undertaken in this country. The textile industry of India is now sufficiently large to warrant developments in ancillary industries, on which a small beginning has been made in the last few years. The industry also requires a thorough change in equipment not only because it has suffered heavily owing to depreciation but also because it may have become obsolete owing to newer inven-

tions in the West. Immediately it may not be possible to develop all subsidiary industries and the necessary change will have to be effected by the import of machinery from abroad. It should be the duty of the Govt. to facilitate the import of new equipment in so far as they may be available.

What is true of cotton textile industry in matters of technological progress and up-to-dateness is also true of most other industries in this country. The Tata Iron & Steel Works is a notable exception to this and it has been more alive in keeping pace with the improvements abroad which have been adapted in this country. It is of course true that in several cases the equipment of the Tata Company's Works falls short of the best attainable efficiency; but then "it should not be thought that the Works is inefficient as compared with other works abroad of similar age. Doubtless a few works on the Continent and in America which have been entirely planned and built since the war are better equipped but it would probably be difficult to find a works dating back to the prewar period with which the Tata Company's Works does not compare favourably." The company has continued to improve and modernise the plants and has also been able to develop a number of subsidiary industries, e.g., wagon industry, tin-plate industry, foundry, steel wire products, re-rolling mills, etc.

COST OF DISTRIBUTION:

It has been pointed out in my *Indian Business—Vol. I* that cost does not mean merely the cost of production. Cost that determines price also includes cost of distribution, both wholesale and retail. The various cost items in the field of production are more or less fixed and are determined by the prices at which various materials have been purchased. Thus the costs of production of a particular commodity are the result of two factors, viz., first, the price at which the material is purchased, and second, the proportion in which it is essential or its service is essential for the manufacture of a particular commodity. But the cost of wholesale and retail distribution is related to the work done, to rapidity of sales and to the risks run, with the result that it varies considerably from trade to trade, and even in the same trade under differing circumstances. Under these circumstances it is not possible to

obtain any precise information about the different items of cost in different lines and the only thing that can be suggested is that every effort should be made to increase efficiency and reduce cost. In western countries, e.g., this tendency has shown itself in the formation of trade associations either for limiting competition or maintaining price or controlling supply, if necessary by bringing pressure on the producers or for reducing or eliminating risk by combined action. In so far as this recent tendency has led to monopolisation and exploitation of the public, it is to be deplored. But this is not its only aspect. In many cases the idea behind this recent tendency is to increase efficiency and in so far as this object has been achieved, the tendency needs be justified and encouraged in this country.

CHAPTER II

MANAGEMENT AND EFFICIENCY

In the previous chapter we have considered some factors governing cost and efficiency. But efficiency in cost-factors cannot be secured without efficiency in management. Labour, finance, factory and machinery—all are useless unless there is a man who can coordinate all these factors in the most profitable way. For, however much efficient these factors may be, they cannot give a good account of themselves if management happens to be inefficient. The happiest combination is that in which both management and the managed are efficient.

The development of management is in the process of evolution. When business was simple and industry on a small scale, management also was not intricate. Whatever method brought some profit was regarded as efficient and the management which brought profit in a given set of circumstances was regarded as the best. When management failed to bring any profit or even when business collapsed; the management was seldom blamed; for, at this stage, the apparatus of testing the efficiency or otherwise of business management was totally lacking. Besides, ownership

and management being in the same hands, the failure was attributed not to management but to some unseen and unknown contingencies, say, ill-luck. People gained by experience and the business that was developed on the family basis was the resultant of accumulated experiences and mistakes of generations. The opportunity for progress in such an economy was less; for the defects of management being undetected, the faults were repeated, till they were rectified, either because of greater amount of loss incurred, or at the suggestion of somebody else.

This is the crude stage in the development of management which the modern nations have left far behind. So far as we are concerned we cannot say that we have been able to modernise our management to any mentionable extent. So far as small industries and trades are concerned,—and these constitute the major portion of our trade—management is mostly empirical in nature and the craft or trade is a family concern. These were mostly in the hands of a few business communities, like the Gujeratis, Marwaris, Parsis and to some extent Mahammedans. For some years, however, local people have become conscious and they are now taking more and more to business thereby breaking this monopoly. But even this new element is not bringing any new type of management with them. They are simply copying the existing one and under pressure of competition the older houses are setting their business in order within the limits of the agelong system of management. Everywhere in this sector this feeling is predominant that administration is unremunerative and the owner who comes to occupy business by inheritance feels himself as master of all work. The result is that management, with a few notable exceptions is in the hands of people who manage it by the “old, traditional, hit-or-miss methods”, based on guess or intuition rather than on a correct appraisal of business situation. Consequently business management in India is at a very low level of efficiency, mostly unscientific, without any financial and technical plan and mostly without effective coordination and adjustment among various factors. True, we are late-comers in modern business. But late-comers profit by the experiences and mistakes of others, which we have not. To-day management and control, size and working should all change; scientific methods must occupy the place of intuition and empiricism; hereditary manage-

ment must give way to scientific management. Science in industry should be the underlying feature of modern business.

Even in the organised sector, the condition is not very encouraging. Industrial development of India has been due to the enterprise of managing agents. As the title implies, they should have specialised in industrial management; and yet so little attention has been paid to scientific management. Regarding the same, we have no statistics; but this much can be said without doubt that industrial management is mostly based on empirical methods. From the standpoint of efficiency, European managing agents are more successful, while the Indian managing agency system, based as it is on heredity, degenerates in efficiency in the second or third generation.

In modern business time-worn management is worse than none. With increasing complexities of business and separation of management from ownership, with the invasion of business methods by newly-developed equipments, and with the high degree of development of accountancy under the influence of company law, management has tended to be scientific and has been based upon functional organisation. In this country, the management-aspect is not altogether separate from ownership and financing-aspect because of the existence of the managing agency system. Even though the powers of the managing agent are to-day curtailed or restricted, yet this link between finance and management still exists. Management to be scientific should be separated from ownership and based upon functional division, as shown in a chart in the appendix. Functional organisation indicates the division of functions into different branches and attempt has been made to make this division as scientific as possible. Of these, planning and research, as shown in the chart, occupies an important position and yet they are most neglected in India. Line organisation is applied to a vertical line organisation where one rank is clearly below another to which it is related directly, like "the army with its generals, colonels and successive ranks down to the rank and file." Under modern conditions line organisation is closely associated with horizontal functional organisation, like engineering services, medical services, etc., and each of these horizontal functional organisations has its own line organisation. "In a sense every functional ele-

ment must be controlled by line organisation, for otherwise responsibilities would be divided, with results fatal to efficiency." Functional division has not stopped here but has gone into processes with a view to create scope for expertness. This is called staff organisation under which each function or department is subdivided, each subdivision being specialised. The hierarchical organisation on the line type is not absent; the only thing is that each department, instead of being all-embracing and all-powerful, is divided, each division being entrusted to specialists by function. Line organisation and functional organisation are old enough, and complementary and inevitable in a developed form of business, though these have found an important place in management literature with the coming into prominence of the scientific management idea. Staff organisation is only a recent addition and is due only to the need for expertness.

The increase in competition in world market from the beginning of the present century brought to the forefront the necessity of reducing cost and increasing efficiency. The result of this is scientific management whose aim is to subserve "the common interests of employers, workmen and society at large, through the elimination of avoidable wastes, the general improvement of the processes and methods of production and the just and scientific distribution of the product." Taylor considered scientific management as implying productive efficiency through job analysis and labour control. In many cases, like rationalisation, it has become a plea for the exploitation of labour; but this is no true scientific management. Scientific management to-day includes a variety of things—"the effective application of accurate information scientifically derived and correctly interpreted to the proper planning, direction and control of the various factors involved in the conduct of an enterprise, resulting in the attainment of the largest output, of the highest quality at the lowest price and with the least expenditure of time and energy as well as in the provision of the greatest gratification to all concerned." Modern industrial administration rests upon six pillars, viz., investigation, objective, organisation, direction, experiment and control. Investigation includes the determination of the definite and ascertainable causes which are responsible for every business phenomenon, collection of facts on the basis of which action must proceed, analysis, stan-

dardisation and measurement of these facts and their proper adjustment with environment. A clear determination of objective is essential and every action must be so taken as to fulfil that objective. Principles of organisation include things like functional division, close correspondence between authority and responsibility, initiative, coordination of activities with a view to secure economy of operation, and continuity of these activities. But organisation in itself is not enough but depends in its turn on proper direction of the organisation. This includes so many things as publicity, incentive, planning, simplification, standardisation, balancing, equity and mobility. Each of these factors is important, and taken together they may be grouped as rationalisation. Publicity does not mean external publicity, but publicity inside the factory regarding the objective so that there may be a clear understanding as to the purpose of each task and its general relation with the ultimate objective. This sort of publicity makes each division and sub-division conscious about the object of the enterprise. Incentive does not simply mean the incentive of the entrepreneur, but that of each and every operative. Internal publicity may create consciousness among the operatives, but further success in this direction will depend on proper selection of operatives, their training, assignment of work, creation of suitable environment and spirit of co-operation towards the common goal. The principle of planning is to be applied to the provision of all necessary equipment, material and human effort. Simplification of processes and standardisation of products are essential for eliminating unnecessary elements so that work can proceed with minimum of effort and few unnecessary action. The principle of standardisation is to be applied to all materials, designs, processes and quality. Besides, there should be proper balance between different processes so that they may operate with equal effectiveness. The need for industrial mobility has already been noted in the introductory chapter. "The vitality of all enterprise is measured by its power of spontaneous reaction to changes in economic conditions, and of internal modification and rearrangement to meet such changes. This is true, both of material and human factors, of methods of business organisation and of relations among classes, as well as of personal skill, enterprise and leadership which individuals bring into the common stock." Experiment is essential for fostering

industrial mobility. Expenditure for experiment is a fruitful investment and experiment should be conducted from the minutest process to the biggest machine. Over all these works is the principle of control, which is the most important factor in modern business. For, the efficiency of the entire work depends on this single factor. Control to be effective should be based upon the responsibility and incentive of each operative in the functional or staff organisation, and backed by evidence, uniformity, comparison and utility. Factual study is important in business not only for the formulation of present policy but also for future expansion. Empirical method has no place in scientific management; everything should be based on facts and figures. Scientific management also includes a rational selection of men, materials and equipment, so that the best operatives may be given to work on the most efficient and up-to-date equipments. Finally, scientific management is based on harmonious relation between the management and the operative, which in its turn assumes the establishment of industrial democracy. This requires on the one hand an atmosphere of hopefulness and change and on the other a scientific system of wage payment, with of course a fixed minimum below which wages must not go.

When a new concern is therefore to be started, it must take note of all the above principles and apply science from the very initial stage of the selection of site to the final stage of the commencement of production, under expert guidance. But in case of an old concern, the task of the organising engineer at introducing scientific management is really complex; for, he has to make a thorough and analytical study of the different functions. In our country motion-study in different processes is rendered difficult owing to the absence of properly-compiled charts regarding process, operation, flow, progress, etc., which need compilation analysis and synthesis of the whole thing. Experience in America shows that this sort of effort has resulted in a sufficient reduction in cost and increase in efficiency. In our country the scope for cost-reduction is all the more great, particularly in old-established concerns where from personal visit I have found machinery as old as fifty or sixty years being worked according to the time-worn methods. In some cases efforts are made to make such equipment yield as much result as possible; but such effort cannot be success-

ful beyond a certain limit. Motion-study in America has yielded wonderful results and in some cases cost-reduction as much as 25 p.c. has been possible because of this. Accurate costing is no less essential for giving a fair share to the operative in the national dividend and this is one of the means of securing harmonious relations between the two diverse interests. Even in Russian industrialism, this aspect has been given due consideration and labourers are "piece workers paid at a progressively increasing rate on a speed-up system." America is fortunate for having men like Taylor and Gilbreths, Barnes, Porter and Barrett and many others for carrying on investigation in some field or other of scientific management. In England also in recent years something in this line has been done by the Industrial Fatigue Research Board, National Institute of Industrial Psychology and Business Research Association. Our industrialism is unfortunately suffering not only in unskilled operatives but also in age-worn machines and old processes. If our industrialism is to progress and to face world competition, it must reduce cost and increase efficiency. As yet our industrial establishments are lacking in Taylors and Gilbreths, Porters and Barretts, nor is our country supplied with any professional efficiency experts except perhaps the Eastern Bedeaux Company at Bombay, which has recently started work on a small scale.

Scientific management is a noble industrial ideal, but in actual field the reaction of labour to this ideal has not been favourable. Of course, organised labour cannot, and does not, oppose savings in waste and increase of output resulting from improved machinery and truly efficient management. But if scientific management in practice means nothing but speeding-up of labour, in that case the organised labour has real reason for grievance. In our country we must be very cautious about this matter. If scientific management, instead of securing more harmonious relation, disturbs the existing one, it will frustrate its purpose. Therefore, scientific management to be true to its purpose must be truly scientific so that it may on the one hand reduce waste and increase efficiency in business and on the other secure more harmonious relation between labour and capital, and particularly raise wages and the standard of living and improve the conditions of work of the operative. The apprehension of labour as to the attitude of

management towards trade unionism cannot be unjustified. For, the experts on scientific management claim that trade union and collective bargaining are redundant for the protection of labour. The best method would be not to reject trade union but to take it into full confidence.

In conclusion, a few words need be said on education for management. All observers of industry and trade in the present century are aware of the great changes taking place and some have gone so far as to declare it as a "new industrial revolution." The result of this has been that business management "makes almost overwhelming demands on men's ability and knowledge." Management to-day is therefore not so simple as in the last century. According to Sheldon, (his *The Philosophy of Management*), "Management proper is the function in industry concerned in the execution of policy within the limits set up by administration and the employment of the organisation for the particular objects set before it." Thus management to-day is a very complex task and the defeatist goes so far as to say that "there are so many imponderables entering into fitness for management that preparation in advance cannot be conducted even to a limited extent. Such an attitude is doubtless responsible for the view, widely held by leading industrialists, that success in management is exclusively due to personality, by which presumably they mean that managers are borne, not made." But then in present-day business experience as well as acquired qualities are as much important as gifts of nature; nay, they are more, because the supply of born managers is limited; and to a considerable extent managers have to be made by acquired abilities supplemented by continuous working and experience. Hence the need for education for management.

But, then, what is the type of education to be provided for management? A writer in the *Twentieth Century Business Practice* gives us some guidance in the matter. The subject is considered under three heads—(a) aim of education, (b) type of students for whom such education should be planned and (c) essential features of the curriculum. The aim of business education should be to train up prospective manager in the general principles of management which include mechanical principles, financial principles, principles of equity and economy and principles of

industrial relations. The educational system must be such as to give a breadth of vision which is so very essential for making a balanced judgment and to induce in him a habit of mind which will qualify the student for undertaking responsibility. In brief, the aim of education should be to train the student "for business" in the widest sense and not "in business." Technicians therefore are not suited for the purpose. It is to be remembered that the general manager has to deal with so many diverse things, like design and development, production, distribution, finance, personnel and conservation. The non-technical manager can solve his difficulties in technical matters by receiving advice from qualified subordinates. But a technician with his mind closed in a particular matter finds it extremely difficult to tackle such problems as distribution and finance which require a breadth of vision in the manager, but cannot be settled by reference to established practice or calculations. The fact is, as Mr. Sargent suggests, that "it is the training that matters, rather than the memorising of some special groups of facts which can be immediately turned into cash."

Truly speaking, in India there is no such thing as training for management. The few commercial institutions that have cropped up in this country are less of institutions and more commercial in nature. The curriculum is most often framed by some old retired hands who had never any connection with business. The subjects taught in the highest course are very elementary in nature, e.g., Economic History, Business Organisation, Static Economics, Elementary Statistics, Banking, Elementary Actuarial Science, Accountancy, Trade and Mercantile Law. For a primary course, this is well enough; but this is not all. A higher study in business, a training in management, should include in its curriculum subjects like Market Research, Personnel Administration, Sales and Office Management, Costing, Financial Management and Higher Budgetary Control, Purchase, Building and Process Planning, Control of Production, etc. A special training is essential in matters like Industrial Relations, Industrial Fatigue and Psychology, Social Obligation of Industry. As yet we are dependent on foreign supply of business managers in many of our successful concerns. But this is no healthy position, nor does it lead to further development. A trained army of managers is essential for success in industrial domain.

For sometime past there has cropped up a controversy as to the efficacy of state and private management. This however does not falsify the above analysis and conclusions. The only change it involves is the replacement of owner-managers by salaried managers, the state exercising control through some statutory corporations. The stepping-in of the state in place of the individual may become essential for expediting the pace of industrial development. Elsewhere I have argued that industrial expansion "may take place in an atmosphere of free competition and laissez faire, or under the direction of the state, the latter being more common now-a-days even in countries which once preferred laissez faire, the idea being that state capitalism is much more effective than its laissez faire prototype...There is nothing to choose between the two apart from the factor of effectiveness according to changed times and circumstances." Industrial development of different countries of the west as also of Japan have taken 50 to 100 years and under private initiative we may take more than this period for coming up to that standard, and by that time the West will move further. Upto 1935, the private investment of capital in industrial undertakings has amounted to Rs. 250 crores and there has been an expansion of about 15 p.c. during the war. Hence for rapid industrial development, state ownership, planning and direction in many sectors may be inevitable. But so far as internal efficiency is concerned, there is no way out except for scientific management as enunciated above.

CHAPTER—III.

SIZE AND EFFICIENCY

An important factor affecting the efficiency of a productive enterprise is its size or the scale on which it is carried on. It is of course true that there is no definite and simple relation between costs of production and scale of output. This relation is in fact a very complex one, being determined in any particular case by the interplay of a number of forces, some material, some human acting in different directions. But yet a certain amount of correlation may be established between the two and certain broad conclusions may be deduced therefrom.

The concept of representative firm was introduced in Economics by Alfred Marshall with a view to study the cost of production as it would determine price when the firm is working under the law of increasing returns; for, in that case the marginal analysis was of no use. Prof. Pigou has conceived of another firm, the equilibrium firm which in itself will be in equilibrium position when the industry as a whole will be in equilibrium. In more recent economic literature, emphasis seems to have shifted from all these complicated concepts to another new one, the equilibrium of the firm, no matter what the position of the industry as a whole is. Whatever the trend of discussion in academic world, it is an accepted fact that there is a minimum size for every individual unit which is absolutely essential for ensuring economical working. Among the forces that have played their part for the expansion of business unit, mention may be made of the extended possibilities of specialisation, sub-division of processes, and use of mechanical power and elaborate machinery and all the other well-known advantages which tend to make mass production cheaper than production on a small scale. The practical businessman whose ideal is always the expansion of his business is not simply concerned with the minimum size to which his business shall expand, but the maximum size beyond which it should not go; for, by the side of economics of large scale business have to be weighed the increasing difficulties of control and supervision, finance and

marketing, and even of technique which sets the optimum limit to which a business should expand. In fact, this aspect of the question has become more important in recent years. For, while the attainment to a minimum level will increase the economies of mass production and distribution, the attainment to the optimum level in an industry or trade would bring the cost of production and distribution to their minimum and thereby raise the competitive efficiency. It must however be borne in mind that this optimum is nothing rigid, but the resultant of various forces and "that this typical scale tends to grow with the development of modern industrial methods, though the rate of increase varies very widely as between different industries and different countries."

In economic literature, a distinction has been drawn between five types of optima—technical, managerial, financial, marketing and lastly, the forces of risk and fluctuation making for a unit possessing the greatest power of survival in the face of industrial fluctuations. From this, however, it should not be taken that the optimum level is reached in case of every concern in each of these five aspects at one and the same time. In some exceptional circumstances only this state of affairs will be reached. Generally the gain in respect of anyone of these factors may be counterbalanced by loss in respect of another factor. Thus effort is made at bringing about reconciliation. The technical factor may necessitate a degree of expansion which may be too large to be managed efficiently. The advantage of a large selling unit may be counterbalanced owing to loss resulting from large productive unit, particularly in times of depression, when there has been a contraction of demand. In each of these cases equilibrium is arrived at. But the nature of equilibrium is not the same in all cases. When there is equilibrium in each of these different factors, the equilibrium of the firm will be of one type; when however equilibrium is arrived at by a counterbalancing of loss in some respects and gain in others, the equilibrium of the firm will be of different type. "The equilibrium may be similar either to that of the tug-of-war rope which is motionless because no one is yet pulling in either direction, or to the tug-of-war rope which is motionless because the two teams are for the moment equally matched."

So far as India is concerned, any study of size and efficiency

is beset with certain difficulties. In considering the efficiency of industrial organisation with reference to size, we will have to consider the individual units in each industry and see how far they satisfy the conditions of different optima. In other words it will have to be seen how far individual units in different classes of industries have attained to a size which is capable of securing the maximum possible efficiency. From theoretical standpoint the whole discussion seems to be simple enough; but the difficulties in the way are enormous. For, while it is not possible to be dogmatic as to the relation between size and efficiency, some other problems crop up even when some sort of correlation between size and efficiency is established. For, the very first thing with which we are faced is the question, what is the individual unit in an industry? The answer is not so easy. From technical standpoint of course any factory is to be regarded as an individual unit, any further technical expansion being regarded as a part thereof. But when under the same management and finance, two separate technical units are operating, a real difficulty is faced. A still greater difficulty arises when the two technical units are situated in different regions. In the former case, leaving aside the actual operation, everything else including management, purchases and sales and even supervision may be the same. In latter case, higher management and finances may come from the same source; but in all other matters, there must surely be some difference in purchase policy, price policy and sale policy according to the influence of localisation factors. Not only this; these different units under the same management may, and actually have different degrees of freedom in different matters. That this state of affairs exists is not a matter of theoretical discussion but of actuality in this country owing to the existence of managing agency system who have a large number of concerns under them not only in different lines but also in the same line. They have a varied type of control over concerns under them. They not only look into management but also finance the concerns under them; besides, a great amount of cooperation in matters of purchase and sale has been rendered possible because of the association of a large number of concerns with the same managing agent. This is also a reason why optimum in different matters will be different. Thus while a particular industrial unit may be suffering in technical

matters because of non-attainment to technical optimum, yet because of its association with a house of managing agent, it may be enjoying economies of large scale organisation, large scale purchase and sale. The small technical unit need not maintain any separate organisation in these matters. In financial matters also, this association with managing agent has been of great benefit to many smaller technical units. By itself the small technical unit may be financially weak; but this apparent weakness is no weakness because of the association with the managing agent. Thus during the depression many independent bigger concerns were faced with difficulty while many smaller units had a smooth sailing because of such association. Thus the difficulty is apparent. For, while from technical standpoint, each factory will have to be considered separately, yet in matters of finance, risk and fluctuation, marketing, etc., they are only a part of the bigger whole and therefore the diseconomies that may accrue from technical standpoint may be more than counterbalanced because of economies in other directions. Thus the technical unit in cotton textile industry in Ahmedabad is smaller than in Bombay; but this has not brought any difficulty on the whole from the standpoint of competitive efficiency. This shows that we must not be over-emphatic about size in technical sense, but before coming to any conclusion see whether dis-economies due to size are being more than offset by economies in other directions.

The difficulty of the present study is all the more accentuated because of the lack of adequate data. First, it is not possible to know output of different concerns. Secondly, it is not possible to know cost on which a greater amount of secrecy prevails, and in the absence of data it is not possible to say whether a typical unit in an industry is the optimum unit or not. Again, in the same industry different units may continue to exist and even thrive and it becomes difficult to say which of these different units is the truly optimum one. Whatever that may be, the broad conclusion is that within a certain range the industrial units continue to thrive, and although in any particular matter they may not be equally efficient, yet on the whole, all of them may be on the same or near-about level. One may be technically more efficient than the second one which may be near the managerial optimum. A third may be financially better off than any other and so on. On

the whole all these firms may have the same competitive efficiency. Each may have its own equilibrium and may also be in equilibrium with the whole industry. But the equilibrium of a particular firm may not be the same as the equilibrium of a second one. Thus each firm has its separate equilibrium and each is working successfully although each differs from the other in many respects. Hence our conclusion is that the optimum is working within a certain range. For, the optimum of a particular unit is the result of optima or otherwise of various factors and these factors differ for different concerns. The optimum for an individual unit is not only the result out of different optima in matters technical, financial, managerial, etc., but it varies according to time and place. Thus a firm which has attained optimum level to-day under a given set of conditions will not remain optimum as soon as those conditions change. With the development of minutest processes of operation, the work of each individual operative may be decreasing; but the totality of the processes will undoubtedly require a bigger optimum. Thus in those industries where processes of operation are too many, as in the iron and steel industry, the technical optimum is naturally big. Again, optimum unit differs from country to country. Thus the average cotton mill in India is much smaller than that in Lancashire. But since for most of these concerns in India, the managerial and financial optima have been reached, there is no use in extending the size of these, simply because they happen to be smaller than those in some other countries. The fact is that the point at which different optima will reach a reconciliation is not the same, and according as this reconciliation point is reached, the optimum level is attained. This difference in optimum takes place not only in different countries, but even in different districts of the same country, as in Bombay and Ahmedabad. In view of these differing optima and difficulties of study due to them, it may be asked, how one can know whether a particular unit is at optimum level or not. The task of determination of optima is really difficult and the practical man will say that the only guide in this matter is the study of various optima as indicated by gradual experience. When it is found by experience that the operation of different optima in case of different firms has brought, under a given set of conditions, and with a given output, and taking all costs into account, the lowest

cost per unit of output for a particular unit, it may be said that this particular firm under those conditions and with that output is the optimum. It must however be noted that the cost of this firm will not determine the price. It is only the limit of efficiency under given conditions. Price will be determined by the cost of some other less efficient firm upto whose productive capacity, including the production of all firms coming in between this and the most efficient one, the market demand exists.

Having considered the difficulties of the present analysis, let us try to indicate the standard available to us by which a rough idea may be obtained as to size and efficiency in different Indian industries. The most scientific method of analysis would no doubt be the cost in each individual unit. But this method is unpracticable owing to non-availability of materials. Output is another measure and will be applied to coal mining. By itself, however, output as standard in other industries is no good guide. It is the tendency in some factories to produce as much as possible, whether this production is sufficiently profit-earning or not. This in particular is the case in those factories where the commission of managing agents depends not on profit but on output. And since the managing agency contract is terminable after a certain period, it comes within the interest of managing agent to increase output as much as possible. This sort of attitude is not unknown in this country. The degree of capitalisation is another measure, but even here non-availability of data is a handicap. The common method of calculation may be the paid-up capital of different concerns, which may be taken from the balance-sheets. But even here the difficulty lies in the fact that the method of financing is not the same. Some concerns are more dependent on share capital than on borrowed capital, while the case of others may be just the reverse. The total block value of each individual unit may be a better guide, "but the methods of valuation of the capital invested in buildings, equipment and material are so various that the figures do not have the same significance in respect of each firm." The financial requirements of different concerns are also not the same. Some concerns get power supply from some outside concern, while others may have to generate it themselves and hence have to invest some money in it; some concerns may have a local supply of labour while others may have to im-

port labour and provide for their housing, etc. Some areas may be well-supplied with banks, while in others money may be dear. This and other similar differences make the capital requirements of different concerns different. Unless all the concerns under consideration are under the same sort of working conditions and unless the methods of finance and investment policies of different concerns are the same, capitalisation as a guide to the consideration of size and efficiency is not very accurate. Another measure may be the number of labour engaged in each concern. But here two difficulties arise. First, the difference in degrees of mechanisation makes a comparison in this line inaccurate. Secondly, in those concerns where the interest of managing agent lies in the turning out of a huge output, a large number of labourers will of necessity be required, even though the degree of mechanisation may be the same in two different concerns. In some cases profits earned may be taken as guide. Here of course the phenomenon of business cycle makes the study unscientific, because in the years of depression, even an efficient concern cannot give good account of itself. But the study may be of some help if a number of years covering the whole cycle are taken up into consideration, or at least the situation is considered for those years which may fairly be regarded as normal. These are some of the measures for considering size and efficiency and which one of them is suitable for our purpose will depend not on any arbitrary selection but on the nature of the industry and on the availability and accuracy of materials.

Let us take up technical considerations first. From technical standpoint considerations of size require that the unit under consideration must be such as to give scope to division of labour and utilise its economy to the fullest possible extent. This division of labour cannot however be the same in different industries, nor even the same in different departments of the same industry. Just as division of labour requires a large firm, so also the integration of processes. For, only the big firms with good technical backing can afford to keep very expensive machinery, and not the small one. In some cases the competition of bigger unit will oust the smaller one. In others, where small unit is not completely ousted but continues to exist, the bigger one has undoubtedly a greater advantage. But then it must not be forgotten that the firm

cannot go on expanding to infinity. The expansion depends on the extent to which economies may continue. In this way, after a certain stage, any further expansion proves uneconomical. Circumstances may favour the growth of one or two units to very big dimensions, as has happened in the case of the following mills; but this must not be taken as a standard for the whole industry.

Madura Mills Co. Ltd., Madura—229858 Spindles.

Buckingham & Carnatic Co. Ltd., Madras—106180 Spindles.

Madura Mills Co. Ltd., Ambusundaram—140736 Spindles.

Sholapur Spg. & Weaving Co. Ltd.,

Bombay Presidency—111360 Spindles.

Bombay Dyeing & Mfg. Co. Ltd.,

Bombay Island—108464 Spindles.

In general, optimum technical unit will be large in those cases where production is very complex, consisting as it does of many minute parts, as is the case with automobile or typewriter manufacture, or in those cases where huge machinery is required, as can be seen from the Tata Iron & Steel Works.

So far as Bombay Island is concerned, the Bombay Mill-owners' Association considered that a mill with at least 30,000 spindles and 1,000 looms was the minimum size required for efficient production. For Ahmedabad the corresponding figures were 25,000 spindles and 600 looms. For the rest of India the average is still smaller. Thus during the decade 1925-34, the average size for the spinning section for the whole of India varied between 26.1 and 27.7 thousand spindles. For Bombay it varied between 40.3 and 41.6 thousand spindles, for Ahmedabad between 24.2 and 26.8 thousands and for the rest of India minus Bombay and Ahmedabad 20.2 and 23.0 thousand spindles. The corresponding variations for weaving section are between 550 and 590, 920 and 950, 520 and 590 and 380 and 430 looms for all-India, Bombay Island, Ahmedabad and rest of India respectively. For the year 1940, in the whole of India the total number of mills was 388 and the number of spindles and looms installed 10005785 and 200076 respectively. Thus the all-India average for spindles was slightly less than 26000 and that for looms slightly above 500. For Ahmedabad the corresponding figures for 1940 were slightly less than 25,000 and slightly above 600, for Bombay Presidency about

23,000 and slightly above 500, and for Bombay Island slightly above 42,000 and 1,000. Thus it will be seen that for the whole of India there has not been any change. For Bombay Island and Ahmedabad however the figures show an increase in the average both for spindles and looms. On the whole therefore it must be said that while the average for Bombay and Ahmedabad have shown an increase and that for all-India stands practically at the same level as in 1925-34, the average for the whole of India minus Bombay and Ahmedabad must have gone down in the year 1940. This conclusion is all the more strengthened from the fact that the average for Bombay Presidency alone shows a marked increase both in the number of spindles and looms between 1929 and 1940. In 1929 the average of spindles and looms for Bombay Presidency was about 19,000 and 450; by 1940 it went up to about 23,000 and slightly above 500 respectively. This situation is largely due on the one hand to the decline in the number of mills in Bombay and on the other to the establishment of new small scale mills in the rest of India. Another fact that emerges from the above analysis is that the size of the mills is not the same in all centres but varies according to local influences. Thus Bombay Island claims the biggest mills in India, Ahmedabad following Bombay Island and for the rest of India the size is the smallest. The reasons for Bombay having the biggest mills are many. The general economic prosperity of the Bombay merchants seems to be the main factor. Besides, the supply of Indian managing ability seems to be the highest in Bombay. Besides, Bombay for long had a flourishing export trade in cotton yarn with China and Japan, the requirements of which required the production of cotton yarn on a large scale so far as practicable. It is well-known that for long these concerns had been specialising in the production of cotton yarn, and totally neglected the weaving side. Hence the whole investment was made on a particular branch of the industry which naturally raised its size. Mills in other centres, including Ahmedabad, were started for meeting local, and at most, national demand for cloth and these investments were therefore made both in spinning and weaving sides. Much again depends on the attitude of those in management. Managing agents in Bombay seem to have preferred bigger units partly because of the export trade in yarn that they long enjoyed, and partly because of the

desire to take the maximum possible utility of such overhead expenses as power, rent, etc. Since these expenses are higher in Bombay, they can only be kept down per unit of product if a bigger output is produced. Finally, the nature of company organisation and methods of financing in Bombay and other centres also have been exerting some influence on size. In Bombay the mills are organised on the lines of joint stock company, the shares being floated for public subscription. Other centres have not been so very fortunate in the supply of managerial ability, financial facility and market and therefore the size of necessity has tended to be small.

Now we shall consider the size of individual units in cotton textile industry in India. The first investigation in this respect was made by Dr. Lokanathan for 1930 from the figures supplied by the Bombay Millowners' Association in their statement. From those figures it is found that the majority of the mills numbering 158 out of 277 had less than 3,000 spindles and 47 out of those 158 had less than 15,000 spindles; 111 mills out of a total of 277 mills fell within the range of 5,000 to 30,000 spindles. Thus according to the economic size laid down by the Millowners' Association, 158 mills fell below the size of economic unit. For Bombay Island the figure for uneconomic unit was 12 out of 70 and for Ahmedabad 43 out of 65. The situation in 1940 can be seen from Table XXII compiled from the statement of the Bombay Millowners' Association. It will be seen that the largest number of mills are to be found within the group of 15,000 and 30,000 spindles. 85 mills have spindles below 15,000 and can definitely be taken to be below the requirements of economic unit. The next largest number is to be found in the group of 30,000 and 45,000 spindles. After that the number has declined. Excepting in Bombay Island therefore the largest number of cotton mills in India have got spindles between 15,000 and 45,000. As to the looms, 122 mills have looms less than 500 and 105 mills have looms between 500 and 1,000. In recent years the tendency has been for smaller mills being established in some parts of India. This however should not be taken with apprehension; for there is nothing intrinsically unsound in small size provided other conditions are quite favourable. Thus in Japan, the mills of smallest size are to be found, much smaller than those in India, what to

speak of Lancashire. Yet the price at which Japan was supplying goods became a source of terror to the West, and also to India. Therefore size although important for the consideration of efficiency should not however be emphasized too much.

If size by itself is not enough for the consideration of efficiency, profit may be taken as a measure. From this standpoint investigation shows that the maximum number of mills are to be found in the group of 15,000 and 60,000. But profit is not an adequate guide to efficiency because of the fact that profit is the resultant of so many factors of which size is but one. Another factor measuring efficiency is the cost of production in small and in big mills. In this respect from absolute standpoint there is nothing to choose between big and small units, so far as the consumption of raw cotton and stores is concerned. And we have already seen that raw material in cotton textile industry constitutes a major item of cost,—approximately about 50 p.c. But so far as purchase of raw cotton is concerned the small firm is at disadvantage. In most centres cotton has to be purchased during harvesting season. This requires not only a good financial standing but also adequate supply of storage facility, which generally are not available to smaller units. But if they are connected with some managing agent, they are at no disadvantage, however small may be their size. Thus here “the relation between size and efficiency is not direct but works out through the financial strength or weakness of the firms.” Another item of cost is due to the employment of labour. But even here there is nothing to choose, from the standpoint of efficiency, between the bigger and smaller producing units. The employment of labour is regulated according to the number of sides in the spinning sections and the number of looms and therefore will not be smaller per unit in a big concern than in a small one. The premium charged for fire insurance being generally fixed according to the capital value of the mill, the reduction, if any, in the cost per unit of output in a large mill as compared with a small one, will not be a huge one. Almost the same thing is true of cost of repairs and maintenance because of the fact that these costs are mainly composed of costs of material and labour. It is only under power, supervision and office establishment, rent, rates and taxes, which constitute about 12.5 p.c. of the

total works costs, that the bigger units are in an advantageous position because of large output. Of these the most important item is power. So far as Bombay is concerned, the large units are in advantageous position than the smaller ones in respect of power consumption. For, since in Bombay power is supplied by an outside central source of supply, a large load will mean on the average a smaller cost per unit of power. The same however is not true of Ahmedabad. In Ahmedabad and in some other up-country centres where power is generated by the mills themselves, it is found by experience that the maximum economy is attained where the size of the mill is between 600 and 700 looms. If the size is larger than this, it will be necessary to extend the power plant and such extension will not be justified unless a very large increase in the capacity of the mill is made. On other items of over head charges, however, the bigger units in Bombay are in an advantageous position and although total works costs are appreciably higher in Bombay than in any other up-country centre, yet so far as overhead costs are concerned, Bombay has to pay less on that account. Even office expenses are lower in Bombay per unit of output and this results from the large average size of Bombay mills and the greater concentration of the managing agency in the same hands. In Ahmedabad also, within the limits set by the managerial and financial optima and also by the power supply available, the mills have tried to expand. The more enlightened and conscientious managing agents have always sought to utilise their financial resources on extensions of existing mills with a view to reducing their charges rather than setting up new concerns, although the latter might be more profitable to them in view of the commissions on materials of all kinds and the fixed minimum commission payable to them by each mill. This step they have particularly been induced to take because of their experience in the years of depression when large number of uneconomic units were swept away. Besides, they have also been actuated by the desire to reduce overhead costs per unit of output by spreading the costs of management and of non-manufacturing operations over a larger volume of output.

And even then whatever disadvantages there may be for smaller mills in up-country centres on account of higher overhead

charges, they are more than counterbalanced by advantages and gains in other directions. The proximity to the sources of supply of raw material and ultimate market for finished product have saved a lot on account of freight charges both ways. The smaller up-country mills being in close touch with the consumers enjoy the advantage of "mobility" with the changes in the nature and quantity of public demand, and have also been able to attract a better supervision from the managing agents. These factors again explain the still smaller size of up-country mills than those in Ahmedabad. Be it noted however that the years of depression did not affect only the uneconomic units in Ahmedabad, but even swept away some of the concerns in Bombay which, due to big size, were apparently sound but really not and the result was that "the fall is greatest in the typical class of 'large size'."

In jute industry any study of size and efficiency is rendered difficult owing to the non-availability of data. The difficulties mentioned in case of cotton industry are intensified in case of jute industry. The only available source was the profits declared by jute mills every year and it has been considered to be a sufficient measure of size and efficiency, in view of the sound organisation of the industry. Dr. Lokanathan analysed the average rate of profit per cent declared between 1914 and 1928, both years inclusive, for 26 firms and had arrived at the conclusion that in "the jute industry concerns having looms over 500 and less than 1,500 have at least as good a chance of carrying on efficiently as those which are larger. Perhaps one may go further and state that concerns smaller and larger than those of this group do not do nearly as well as those which are of the size represented by 500 to 1,500 group." The situation remains unaltered even in recent years, as can be seen in Table XXIII. It will be seen that the maximum number of mills fall within the group of 500 and 999 looms. Although the mills falling in the group 1,500—1,999 are few in number, yet it will be seen that all of them have declared dividends. The condition of mills below 500 looms is not very sound; only 3 out of 13 declared dividend. The prosperity of this group in 1942 was not natural but due to the war time prosperity of the industry.

Although most efficient so far as its organisation is concerned, the industry in normal times suffers from surplus capacity. In this

respect therefore the marketing optimum has been exceeded by the industry as a whole, and from time to time the surplus capacity had to be kept sealed. Even before the first great war, working agreements to that effect had taken place. In Oct., 1931 another agreement was entered into by which the mills in the membership of the Indian Jute Mills Association, comprising about 90 p.c. of the trade worked during 1932, 1933 and greater part of 1934 for 40 hours per week with 15 p.c. of the total complement of looms sealed; besides, the agreement incorporated a clause which provided that the mills would not install any extra productive machinery or relative buildings during the currency of the agreement. In subsequent years the looms were unsealed by stages. In 1936 another agreement was entered into under which the mills were permitted to work upto but not exceeding 54 hours per week on a single shift with no night work. It was suspended in March 1937, to be reimposed in 1939. The problem of optimum size for the jute industry has become all the more complicated because of the growing adoption of substitutes in other countries and because of the threatened scarcity of raw material after the partition of Bengal. Hence in future any further expansion of the industry or of an unit should be based on the careful study of the raw material position and extent of the market.

In the iron and steel industry, the natural tendency for technical unit is to be large. In spite of the adversities of the depression years, the industry has made enough progress in this respect and owing to the execution of the great extension programme, the output of the industry in recent years was much in excess of that forecast by the Tariff Board for 1934-41. So far as works costs are concerned, a great reduction has been effected and it may be said without hesitation that in this respect the Indian industry is in no disadvantageous position. But then it should not be thought that the technical optimum as such has been reached. If the consideration of other optima does not stand in the way, there is still scope for the expansion of the technical unit and consequent expansion of output. For, the advantageous position of the industry in the western countries is due to the very large output which has led to a reduction of various overhead charges per unit, side by side with amalgamation or some other such arrangement for restricting internal competition and with the development of the

foreign market for their products. Indian market itself is sufficiently extensive and its extension will increase with improvement in the economic conditions of the people. There is therefore scope for the expansion of the iron and steel industry; and if the Indian industry is to develop on the same lines as in Europe and America, the technical optimum will have to be stretched within the limits set by financial, managerial and marketing optima. Finance and markets will not stand in the way of the expansion of the industry. The only really limiting factor is management.

The sugar industry of India is in a state of progress so far as size is concerned. Before 1929-30 the industry was in a very uneconomic condition, India being the smallest producer of sugar, producing only 4,500 tons, whereas Cuba produced 26,000 tons, Hawaii 18,000 tons, Philippines 17,000 tons, Porto Rico 15,000 tons, Australia 10,000 tons, Java 12,500 tons, South Africa 9,500 tons and Mauritius 5,500 tons. Since then Indian production has increased, the number of mills having increased from 57 in 1932-33 to 151 in 1942-43 and the output from 6,45,383 tons to 1,275,000 tons in these two years. It will be seen that while the number of factories increased three-times, the output was only doubled; this is due to the coming into existence of many factories of small size. In 1938 the Indian Sugar Mills Association estimated that 500 tons crushing capacity for Northern India and 400 tons for Western and Southern India would be suitable units. According to M/S Begg Sutherland & Co., a factory with 400 tons of crushing capacity would be the smallest unit. In 1936-37 however, the largest number of factories had a crushing capacity of 250 to 500 tons per day, as can be seen below:

1-250 tons crushing capacity per day	...	26	factories.
251-500 " " " "	...	50	"
501-750 " " " "	...	34	"
751-1000 " " " "	...	22	"
1000 tons and above	...	8	"

During the last few years of war, 800 tons of crushing capacity has come to be regarded as the economic size. But since the crushing season is of short duration, the daily crushing capacity gives only a perverted idea of the situation. The total annual crushing capacity in India of an average-sized mill therefore does

not compare favourably with that existing outside. Hence it is worth while to consider how far these units may be regarded as worth while from economic point of view. Undoubtedly from the standpoint of overhead costs a bigger unit will be preferred; for, the greater the output of sugar, the lower the incidence of overhead charges will be per unit of output. Besides, from the standpoint of other economies of production, including the maintenance of distilleries for the utilisation of byproducts and the cultivation of cane by the same management, there is much to decide in favour of a large industrial unit. But these are not the only factors, and consideration of size must take note of factors like availability of sugar cane, transport facilities and access to markets which are equally important. With regard to transport facilities, much depends on the situation of the factory. If there is no factory in the neighbourhood which is better located, in that case even a smaller unit may do. But if, of two factories, one is better situated than the other and hence enjoy a freight advantage, the factory less advantageously situated must be big enough to recover the loss on account of higher freight charge that it will have to pay from economy in other directions. But of all factors determining size, the supply of raw material is of utmost importance. The problem is complicated because of the fact that sufficient quantity of good quality cane must be available within a reasonable radius. In the rest of India, except Bombay, the usual practice being the separation of agricultural aspect from the manufacturing one, this supply became all the more uncertain. The supply has increased since 1930, but so also demand owing to the increase in the number of factories and hence there is often a keen competition for the available supply. For the whole of India except Bombay the manufacturers get only 10 to 15 p.c. of their supplies from their own farms and most manufacturers before the war were able to get about 50 p.c. of their cane within a reasonable distance and at that time a crushing capacity of 500 tons was regarded as a reasonable economic unit. To-day under the changed circumstances it has become 800 tons per day.

In paper industry, technical unit by itself is no guide. According to expert opinion, a complete four-machine-mill fitted with plants for undertaking all processes upto the manufacture of paper is the smallest economic unit. But this should not be taken as

anything hard and fast. For even in countries like Britain, even a smaller concern produces at less cost. The main drawback of Indian industry is not due to the small size of technical unit so much as to the dependence of the industry on foreign countries as regards the supply of pulp as also of machinery and plant. In recent years the proportion of foreign pulp used as also its import have gone down; but in other respects the drawback continues which cannot be solved by mere expansion of the technical unit, which will mean a proportionate increase in the cost on account of plant and equipment. It is of course true that as in other industries, so also in paper industry, units of varying sizes are to be found; and for smaller units there is scope for expansion. But that does not show that under existing conditions after a certain size any further increase in size will lead to increase in profits. Only when managerial optimum demands an expanded size, a case may be made for a bigger unit. When conditions however improve and cost of plants and equipments come down owing to the availability of their local supply a case may be made for increasing the size by investing the surplus funds in extensions within the limits set by managerial optimum. In recent years the number of paper mills has increased; but there has not been any marked increase in the paper-making capacity of the mills. The hopeful feature however is this that there has been a steady improvement in total output as also in the production of indigenous pulp which is partly due to the improvement in the process of manufacture. With the increase in the production of bamboo pulp, the import of foreign wooden pulp has diminished to a considerable extent. In cost of manufacture also progress has been made and there has been a considerable reduction in the works costs of unbleached air-dry pulp. In 1937-38 the capacity of an average mill in India using bamboo or bamboo and grass as their raw material was 6,000 tons. During the war costs all-round have gone up; and hence 8,000 ton capacity is considered as the economic size to-day.

So far as heavy chemical industry is concerned, its development in this country is not worthy of name. Yet whatever inadequate development has taken place in this line, it suffers from uneconomical size. It is of course true that because of heavy freight, import of sulphuric acid has not been possible and what-

ever quantity is produced is spread over a large number of small concerns where the cost of production is almost prohibitive. We have already noted how the supply of sulphur and sulphuric acid can be increased in this country; at the same time we will have to consider the possibility of so organising the chemical industry as to admit of the production of sulphuric acid at an economic cost, since in modern conditions the chemical industry perhaps more than any other depends for its success on large scale production. It should of course be remembered that the unit of production need not be so large as to compare in size with similar units in Europe or England; but "if the chemical industry is to be established in India at a cost to the consumer which in the end will be commensurate with the results, it must conform, within reasonable limits, to the conditions imposed by the considerations of rationalisation." That is not all. Another factor that will determine size is the nature of the existing market. Where a concern has to supply chemicals to the international market, naturally, the technical unit will tend to be very large. But in a vast country like India where the industry has to supply the needs of a vast country, the unit of production cannot be so small as it is at present which is uneconomical and cannot face outside competition. The technical unit to be economical must be so large that owing to freight or other advantages it is able to market its products at a price not above the landed price of the competing imports. One thing should however be remembered. Whatever the size of the unit, it must have in view the market at its disposal and it must be able to work to its maximum capacity so that both works costs and overhead charges may be reduced. It is not that Indian industry has no advantage. In the first place, cost of imported chemicals include freight which comes to about 25 to 40 p.c. of the import price. Secondly, Indian manufacturer has a vast market, both present and prospective. India has a sufficient supply of coal and other resources and if the industry is established in the neighbourhood of power resources and the available market, the Indian manufacturer will be at an advantage. Besides, we have cheap supply of labour which can be made to work on the labour-saving appliances and automatic machinery. All these advantages can be available provided the industry is organised on rational lines. This requires a bigger unit, without which economies cannot be

secured to the fullest possible extent. "Concentration can be and is constantly being effected in other countries by voluntary amalgamation and mergers of groups under the control of one powerful financial organisation."

In coal mining, mere size is not enough. The more important factors are the quality of coal raised and the depth at which the mine is worked. If the quality of coal raised is not good, and if the depth at which it is worked is low, in that case whatever the size of the mine worked, the cost of raising coal will undoubtedly be high. On the other hand, if a small mine raises superior quality of coal at a high level, the cost will be low and the industry will not be suffering from the operation of the law of diminishing returns, thereby maintaining its efficiency. Even in times of depression experience shows that those mines are closed—whatever their size may be—whose output is of inferior grade and which are worked at a low level. In 1935, the number of collieries raising upto 1,000 tons a month was 70, being 34.29 p.c. of the total number, while they produced only 3.44 p.c. of the total output. On the other hand, the percentage of collieries raising over 5,000 tons a month was only 18.70, but they produced 64.53 p.c. of total output. The situation shows some improvement over that in 1919 in this that the number of mines producing upto 1,000 tons has come down from 49.06 p.c. of the total output to 34.29 p.c. But even then the need for bigger units is already there. The working of small mines is leading not only to enormous costs of working on small scale but also to a huge wastage of coal because of the barriers between mines. The need for rationalisation and bigger units has been emphasized in the interest of the industry itself. But so far the results achieved are meagre.

Turning next to management aspect in modern industry, we find that the supply of managerial ability in this country is very small. There is of course sufficient reason for this. In Western countries where industrialism has come as a matter of course and is a product of the soil, the supply of managerial ability also was not lagging behind. But in this country this supply has to be created; and whoever had financial resources became managing agents. Managerial ability nowadays is partly a matter of natural gift, but mainly one of acquired qualities and experience. Therefore, those people who became business managers by virtue of

their huge financial resources could not be expected, in all cases, to be efficient managers. That is why for long, and partly even to this day, India has been, and still is, dependent on the foreign supply of managerial ability. This is a serious handicap. For, it has often led to a clash between different optima. When a foreign manager is appointed, naturally the maximum possible benefit should be derived from it. But if considerations of technique, finance or marketing stand in the way, it is not possible to take the fullest benefit from managerial standpoint.

Leaving aside the consideration of other optima, the managerial optimum sets a lower limit as well as an upper one to the size of a concern. The lower limit is set for obtaining the advantages of large scale operation. For, if output is below a certain limit and if the same establishment is enough even for a bigger output, a smaller unit is naturally at a disadvantage. For, with smaller output, the cost per unit for office establishments and for factors like experiment, development and conservation will be very high. In the case of paper industry, where size is not a matter of very great importance, the minimum-sized plant will be one which can reasonably utilise the energy of the manager. In brief, the lower limit of managerial optimum is determined by the provision of sufficient work which can utilise to the fullest possible extent the energy of the manager. This limit is also determined by the nature of the supply of managerial ability. If, as in India, where supply of managerial ability is limited both qualitatively and quantitatively, the amount of work to be provided cannot be very huge and the technical size will therefore be comparatively small. The upper unit of managerial optimum is determined by the quality of available skill, for, beyond a certain point, work becomes complicated and therefore supervision becomes difficult. In these days of line and staff organisation, supplemented by functional specialisation, the work of supervision itself is being divided and the manager is being relieved of it. But there still remains an important, and still more difficult, task of coordination which sets a limit to the size of a concern. In Western countries, however, the leading-most business magnets have dismissed the idea of any such limitation. But so far as we are concerned, we are still lagging far behind that stage. Even in a country like America, considerations of profit show that the best result is ob-

tained not from very big concerns but from concerns within the optimum range. Therefore the question as to where will the upper limit for managerial optimum be laid down is one of relativity. Where industrial leadership of high order is available in sufficient quantity, the optimum unit can be comparatively bigger in size.

The next important factor determining size is finance. In fact, this is a vital factor. For, if sufficient supply of finance is available, considerations of technique and managerial ability need not hamper operation. But in this country, for industrial finance we have to depend to this day even on the private savings of a few capitalists. Hence financial optimum in this country is determined not so much by the credit and standing of a particular unit as by the resources of the managing agent. Whatever the resources of an individual concern may be, in times of necessity, the entire resource of the managing agent would be at its disposal. Besides, the intercompany investment in concerns under the same managing agency which was so much common before 1936 made the actual financial condition of an unit a misnomer. Intercompany investment has been prohibited; but then the banks in granting credit to a concern are invariably guided by the standing of a managing agency firm. The result is that even if a concern is small, with small resources, but if it is associated with a house of managing agent of financial standing and business reputation, the banks would hesitate less in granting credit to this concern than it would do in case of a bigger concern having no such connection.

The nature of financial optimum in India has therefore been determined by the standing of the managing agency firm. And since European managing agents in Bengal were more advantageously situated in this respect than the Indian managing agents of Bombay, possibly this has resulted in bigger financial investment in Bengal than in Bombay. This is shown in Table XXIV. But bigger financial investment does not mean bigger optimum unit. Although the number of companies and also the total paid-up capital are more in Bengal, the average financial unit is smaller in Bengal than in Bombay and is gradually declining since the first great war. The tendency during the years of second great war has been towards a further reduction of financial unit for all India including the native states. This tendency is indicated in

Table XXV. Another thing to note during the war period is that in India there has been no improvement in the amount of paid-up capital of joint-stock concerns; on the contrary, the paid-up capital position showed a deterioration. Thus the total paid-up capital in 1936-37 was Rs. 312 crores; but in 1943-44, it was only Rs. 309 crores. Thus while some of the countries have advanced industrially, India has not made any progress on this account; on the contrary, not only her capital position deteriorated but also her existing industrial equipments and machinery depreciated under heavy pressure of war work.

About the effect of marketing on size it is not possible to make any general statement. It is however obvious that the large unit enjoys the advantage of bulk purchase of material. But the same is true of smaller units provided some of them combine and effect group purchase. In this country, many smaller units, because of their association with managing agents, have been able to effect purchases on a large scale. The sale aspect is however more complicated. "The increasing costs of sales are therefore a limit to growth which may operate even before the optimum technical and managerial scale has been reached." The only way of escape in such a case is the formation of some voluntary association which may secure economy in marketing costs. At times the limit to sales organisation is imposed by the nature of the industry, particularly when the sales organisation is very big. In that case the cost of distribution per unit of output can only be kept low by a continuous flow of goods.

In India the sales organisation has not been the same but differs from industry to industry. In the cotton textile industry of Bombay, the mills engage exclusive commission agents. This practice is also to be found in some of the other industries. These commission agents are more or less of *del credere* type. The Bombay mills are concerned with wider markets and therefore the marketing unit is larger in Bombay than in other centres where the deals are more or less local. In recent years the Bombay mills with a view to establish direct contact with the consumers have taken to selling goods directly, though, of course, to a limited extent. Some of the largest mills in up-country centres have also taken to the practice of opening their own mill-shops. But these sales units are not very big and at times appear to be uneconomical.

Any further expansion of these units must necessarily be attended with difficulties of finance, management and coordination. The fact is that the commission agents have relieved the industrialists of a lot of work and worry and mistakes on the distributive side. It is also found that even the smaller productive units take advantage of their services. The fact is that only during the years of depression the idea of direct sale with a view to push its volume gained favour and during 1929-32 the Cotton Mills in Bombay opened 25 subagencies and/or retail shops in Bombay City and about 130 such subagencies or shops in the rest of the country. In normal times there is not much to choose between these two types of sale from the standpoint of efficiency; and from the standpoint of specialisation on production side, the stock argument would run in favour of appointing commission agents unless special considerations prevent it. The moderate-sized units may however combine sale with production. In some industries as in sugar and cement where the pushing of sale was essential, the formation of centralised selling organisations have been of distinct help. If commission agency system is, for some reason or other, to be eliminated, the only other suitable sales organisation for each industry, or at least for each centre, would be the formation of some special organisation for the purpose which would undertake the marketing of goods for all concerns. But then the disadvantage of this type of organisation—vertical disintegration as this has been called by some people,—must not be neglected. For, if all or most of the member-concerns belong to the same management, as is the case in the cement industry, the transaction will go on smoothly. But if they are rival concerns, the organisation cannot serve the different masters with same loyalty. Therefore unless the units belong to the same management or unless the unit is sufficiently big to maintain a sales organisation of its own, special organisation for the purpose, except in times of temporary difficulties, as happened in case of the sugar industry in U. P. and Bihar which formed the Sugar Syndicate, would not be suitable.

Finally, a few words may be said on risks and fluctuations and their effect on size. In economic literature, four types of changes in demand have been distinguished, viz., permanent, cyclical, seasonal and erratic. The immediate effect of these changes is expressed through the distributive aspect of business and ultimately

affects production. If the change is of permanent nature and is also frequent, nobody would like to invest his funds in the production of that commodity or at least nobody would like to instal a huge specialised machinery for the purpose. Those industries which are subject to fluctuations of a permanent nature must have the maximum amount of industrial mobility. In this respect the smaller units undoubtedly enjoy an advantageous position because of their limited investments. Cyclical variations are not so much due to changes in demand as to the mal-adjustment between production and consumption. Either this mal-adjustment has to be removed or the productive unit has to be reorganised. It is well-known how the cotton textile industry, during the years of depression, met the situation by reduced capitalisation, diversification of production and collective efforts through their Association. In jute industry, the control of supply with a view to adjust it to demand is almost as old as the industry itself. In sugar and cement industries, central organisations had to be formed for pushing the sale. The fact is that in times of cyclical fluctuation, adjustment has to be made either by dropping out the weakest links in the business chain, or by reducing the output of all or as many of the firms as possible. The former course means a greater degree of suffering for the business community; only the output of a few bigger units remaining in tact; the latter means a disadvantage to bigger units which cannot work their productive capacity to the fullest possible extent and therefore have to incur greater cost per unit of output. They therefore lose their optimum character in times of depression.

Seasonal variation is not of very great concern; for, the cessation of demand is only temporary. Here naturally production is adjusted to approximate demand. If however any stock is left, it is disposed of at a reduced price or carried over to the next season. But where the industry itself is of seasonal character, e.g., agricultural occupation or seasonal industry like sugar industry, the problem of subsidiary employment becomes important. And since in India part-time unemployment affects many, the question is of still greater importance. In other countries in case of part-time workers, effort is made to find out some supplementary source of income. In this country it is often wrongly supposed that cottage industry used to supply such employment; but this

is not wholly correct. For, many of our industries were family crafts and therefore in the hands of non-agriculturists. The supplementary sources must be allied to agriculture. In sugar industry also, as has already been suggested, some subsidiary industries should be developed so as to provide full-time occupation to the operatives. Erratic variation however is not important for the standard industries; for, generally it affects those lines where for some reason or other standardisation is not possible. In brief, the existence of risk and fluctuation tends to limit the size of the industrial unit, partly due to the advantages enjoyed by the smaller units in matters of reorganisation and partly due to the possibility of avoiding mal-adjustment between production and consumption at less cost; for, in case of a bigger concern, adjustment means a curtailment of productive capacity leading to increase in cost per unit. The reverse tendency is equally prominent and the phenomenon of the trade cycle results in amalgamation and enlargement of the size of the business unit. But when amalgamation takes place or monopoly is formed, certain other factors favouring amalgamation and monopolisation must be present; otherwise, the tendency will be towards an unit of mediocre size.

Before closing the present discussion, a few words need be said on the location of industry which in fact exerts influence on the expansion of an unit towards optimum size. "The area and population of available market will depend in part at least upon the selection of that location for the firm which will afford the most ready access to the whole market to be served and that the size of the individual firm will depend upon the radius of the circle within which it can profitably distribute its goods and upon the density of population living within that circle." The two main attractions for industry are nearness to raw material, labour, power and fuel and nearness to market. But these are the general factors. At a certain stage in industrial development, tendency towards a centralisation of industries was predominant. In recent years the tendency is towards decentralisation of factories. With the availability of cheap transport facilities even those centres which nobody imagined at one time to be industrialised are coming to become the seats of industry. In India some of the above tendencies are already operating and the industries are being decentralised to the interiors and also to the native states.

A brief reference may here be made as to the location of industries in India. The cotton textile industry is mainly localised in Bombay Presidency. But the recent tendencies show that the industry is capable of considerable dispersal. The two important factors determining location are the supply of raw cotton and the nearness to market. The first factor favours the location of industry in Bombay and the second in up-country centres. In other textile industries like silk the possibility of expansion is still very great both for raw silk and silk weaving industries. The latter need not be attached to the source of raw material supply but may be developed in any other place. The woollen industry is however of mainly local character and its establishment and continuance are dependent on geographical factors. In jute industry the main consideration for localisation is the supply of jute. For long the iron and steel industry was localised and monopolised; the recent tendency is however for the industry to spread. But even then it cannot move far away from the sources of power and fuel. The localisation of the general engineering industry is due to the influences of the situation of coal and iron mines; but in view of diverse industrial development of different regions, its distribution may be regarded as uneven at present. Although sugar industry is concentrated in two provinces, Bihar and U. P., its development in other places has taken place mainly because of the fact that the market for sugar is scattered throughout the country. The possibility of development of this industry in other provinces and some states is equally great. The finding of the Industrial Survey Committee in Bengal was that there was a great possibility of the development of the industry in that province. "Certain other factors are also favourable to a dispersal of the industry, e.g., the dependence of certain irrigation projects on further extension of sugar-cane cultivation, the congestion of factories in certain parts of U. P. and Bihar and the comparative advantage of certain areas in regard to the export market...The problem of the location of the sugar industry derives its special interest from the fact that although its concentration in U. P. and Bihar is not without justification, there are areas outside these two provinces where the industry could be developed provided certain organisational and other difficulties were overcome." (*The Location of Industry in*

India). In Madras the progress of the industry is checked by the fact that in that province there is a wide range of alternative cash crops, in addition to food crops, the competition of which has stood in the way of expansion of sugar-cane cultivation. In Bombay partly on account of cost of irrigation and partly on account of the practice of heavy manuring, the average cost of cultivation is very high. Where however these disadvantages do not exist in these provinces, sugar-cane cultivation has already started and sugar factories are working. In Punjab climatic conditions are not favourable for the production of cane of sufficient sucrose content. Among the native states, Mysore and Hyderabad have made sufficient progress in this respect.

The location of match industry in India is at present defective. The present location is determined by the availability of imported aspen. This dependence on imported aspen has tended to make the industry dependent on the Swedish Match Co. Its location should be determined by the availability of wood supply in the neighbourhood, whose cost contributes the largest proportion in the cost of final product. Besides, where land is suitable for the purpose, effort should be made to increase the supply of Indian wood by new plantation and only in those areas should the industry be localised. Another factor determining location is the supply of semi-skilled labour. If the industry expects to train its own labour, this factor need not influence location; but where it wants to take advantage of existing supply, the industry must be localised in those areas where labour is already familiar with different manufacturing processes. Bengal seems to be well-supplied in both these respects. Even those factories which depended on imported supply of aspen found the neighbourhood of Calcutta of great advantage. The position of Bombay is not favourable owing to non-availability of Indian wood at reasonable price. The industry has a fair prospect of development; for, the internal demand is sufficient and foreign markets can also be developed. The future location of the industry should be such that on the one hand it can reduce or do away with its dependence on imported aspen and on the other it can get cheap and sufficient supply of raw material and semi-skilled labour. In those areas where the industry has already come into existence but is dependent on imported supply of aspen, effort should be made to

establish and increase the plantation of wood suitable for the purpose. Plantation of suitable species would yield a satisfactory revenue to Government and at the same time enable the manufacturers to obtain sufficient supply of cheap wood.

The location of paper industry presents certain problems. Only Punjab is well-situated in matters both of raw material supply and supply of power. Bengal has good supply of coal but depends for the supply of bamboo and grass on other provinces, whereas Madras and Travancore have good supply of bamboo which can only be exploited by the development of hydro-electricity. But those mills which use rags, waste papers, etc., as their raw material, may be established in any place provided cheap power is available. The location of glass industry is mainly influenced by natural factors like the existence of sand and coal, availability of cheap power and skilled labour. As regards natural factors and skilled labour U. P., is better situated; Bengal's disadvantage lies in the matter of supply of sand from U. P., as that of U. P. lies in the supply of coal from Bengal. But the greatest advantage of U. P. is the availability of skilled labour at low wages. As to the supply of chemicals the industry is dependent on imported supply, except for lime which is available in many places and saltpetre which is available in Bihar. In recent years the production of soda ash inside the country has reduced our dependence on foreign sources. But inspite of the increasing advantage of the industry, it has in many centres remained stationary, or has even declined, which, if not wholly, is partly due to its bad location in certain parts of the country. Hence it is essential that rational localisation policy should be adopted and enforced through a licensing system so as not to sacrifice the most economic production and efficient utilisation of resources and transport facilities. In this respect nearness to market should be a greater determining influence in view of the fragile nature of glass ware.

The cement industry of India is well-situated as to raw materials, except gypsum which constitutes only 5 p.c. of cement output. But as to the supply of power and fuel and as to the market the location of the industry is a bit defective. For, the manufacture of cement requires, at least in part, the use of good coal which has the lowest possible percentage of ash, and this supply is only available from Bengal. The internal market for the product

is extensive enough; but, for the ports, which constitute the principal market for cement, the older units are at disadvantage when compared with imported stuff which is barred from internal market owing to high freight. But since a large section of the industry is under the central control of an efficient combine, the aforesaid disadvantage need not be a serious handicap for the older units from the standpoint of location.

Finally, a few words need be said on heavy chemical industry. We have already noted that this industry in so far as it has come into existence suffers from the uneconomic size of the units. The nature of the industry being what it is, "concentration, and not dispersal, is the keynote of success" in this. This concentration should take place in those areas which are well-situated as to the supply of raw materials and labour and as to the nearness of the market. This development may take place either by amalgamating the existing units in a suitable centre or by starting an altogether new one, thereby removing the uneconomic units. Of the existing units, two biggest ones are situated one in the 24 Parganas in Bengal and the other in Okha Mandal in Baroda State. The industry in Bengal has the disadvantage in obtaining supplies of raw materials from a distance, but gets a cheap supply of power and a good market in Calcutta industrial area. The advantage of the industry in Baroda State lies in the fact that it is in proximity of some important raw material supplies and of the market in Bombay Presidency. India is fortunate in having many chemicals inside; where she is dependent on foreign sources, substitutes can be used. But care should be taken as to the size and dispersal of the industry. First, the existing uneconomic units which have a high overhead cost per unit of output must go or must give way to a combination. Secondly, the location of the industry should be rationally selected so that it may be in the neighbourhood of raw materials, labour, power and fuel and market, so far as practicable. It is of course true that in chemical industry the choice of location is always a difficult matter, because it is not easy to find a sight which is favourably situated in respect of raw materials as well as markets and where cheap power is also available. But the location will have to be determined according to the maximum obtainable advantage in all these respects. I think, the existing location in Bengal and Baroda State may provide the nucleus for

further expansion, particularly because these centres are well-situated either as to the supply of chemicals or of fuel and power and also because these two areas are near the two principal industrial centres of the country, which will provide a very extensive market for the products of this industry.

So far as the future is concerned, two factors should guide the future development, viz., first, the need for a balanced economic development of different regions and second, the need for avoiding excessive concentration, which has already taken place in Calcutta and Bombay, with all sorts of complications like rise in rents and other costs. Their cheapness in other centres has been an attraction for the new industrial units. This has been facilitated by the development of means of communication and by a modification in the policy of the railways to stimulate traffic to and from ports. But even then it cannot be said that a balanced development of all regions has taken place. It is of course true that a perfectly balanced development is out of question in view of varied resources and different potentialities of different regions for industrial progress. But a fairly balanced development within the available potentialities of different regions should take place. In recent years there has been a marked tendency for industrial enterprises being started in Indian states partly owing to lower rents, wages and other costs and partly owing to the attraction offered by state governments. During the years of war this tendency has received greater stimulus owing to the uncertain industrial policy of the government. The need for avoiding excessive concentration arises from the fact that it has led to various social evils. While the aim of location of industry should be the attainment of maximum efficiency with minimum cost, yet the social cost due to this must not be too heavy. "An ideal solution to the problem would be to consider what pattern of distribution would be most suitable from the point of view of industrial efficiency and then to vary it to the extent required to minimise the social cost of industrialisation; in other words, the increase in the costs of production, if any, involved in shifting an industry from a particular centre and the indirect social gain resulting from the same process should be both taken into consideration and weighed against each other to arrive at the optimum location."

In the proper location of industrial enterprises, there are,

generally speaking, two agencies,—first, influence of perfect competition and secondly, the direction of location or relocation by the state. The first method operates well in a free economy based on perfect competition. But free economy does not in fact exist and various sorts of restrictions, imperfections and monopolisations may protect an industry for long from the consequences of bad location. At times although at the beginning the location may be unfavourable, it may be changed because of the success of a great enterprise in the locality. Where however natural forces are not in operation, the direction of the state for securing optimum location from the standpoint of social cost, balanced development and industrial efficiency becomes inevitable. It is preferable that the work of the administration should be of two types—first, it should prevent excessive concentration by necessary restrictive measures, if necessary, by industrial licensing, and secondly, it should open the new areas for industrial development so as to secure a balanced progress in all regions. India is a country rich in raw materials and labour supply. Improvement in internal communications will open many inland places, lead to an extension of the market and bring the supply of fuel and power at cheaper rates. In this connection the possibility of developing new industries in backward areas may also be considered; for, this type of development will not conflict with the older industries. In this respect however the industrialists are better judges than the administration. For, as the Barlow Commission points out, “There is no reason to suppose that so far as the profitability of the industrial enterprise is concerned, the state, if it should take on itself unduly wide and autocratic powers of regulation and control of industrial location will be likely in general to prove any wiser and to make more far-sighted or enlightened choice, from the point of view of industry, than the generality of those who guide individual undertakings.”

CHAPTER IV

RATIONALISATION AND EFFICIENCY

Rationalisation is the result of a change in outlook from laissez faire to intervention in the free play of economic forces with a view to bring about semi-compulsory reorganisation. In other words, rationalisation is a problem of whether, by some degree of interference, we can make firms and combinations of firms of better form and size with a view to achieve the highest possible economies of production and distribution. According to its etymological meaning, it means any method which is based on science and reason as opposed to 'a merely empirical, traditional or haphazard process.' To a businessman it means production and distribution of goods with as much profit as can be realised under existing situation. To its eager advocates it provides the panacea for all evils of industry, including business cycle, and according to them, under rationalisation "there will be no need for the troublesome and wasteful process of bankruptcy in order to separate the sheep from the goat—in order to determine who shall be able to decide how the community's capital is to be employed."

Rationalisation is a very comprehensive movement and has come in different forms in different countries after the first great war. But one thing is common among all of them, viz., emphasis on efficiency. This emphasis on efficiency includes the following items: (a) application of most up-to-date technical methods to industrial processes, (b) scientific organisation, (c) mechanisation of industry and scrapping of obsolete plant and machinery with a view to reduce waste of effort and material, (d) simplification and standardisation of processes and products and reduction in varieties, (e) scientific organisation of labour and maximum utilisation of labour with minimum of strain, which is possible by simplification of processes, more accurate study of conditions of work, scientific management, study of industrial psychology, etc., (f) technical research with a view to promote

industrial mobility, (g) combination of capital and management into larger economical units, (h) establishment of regulating and coordinating associations for the whole industry for minimising the wastes of competition, regulation of prices and production, concentration of production in the best equipped factories and closing down of the sub-marginal firms, (i) avoidance in distribution of unnecessary transport, burdensome financial charges and useless existence of middlemen, (j) adoption of more efficient methods of purchase of raw materials and other requisites in bulk and the sale of the finished product through some central selling organisation and (k) finally, the conclusion of international agreements for controlling the world market and reducing the waste of competition therein. In brief, rationalisation affects everything, beginning from the purchase of raw material till its distribution in the world market and in each process the aim is the attainment of efficiency, and greater efficiency through experience, observation and research.

Obviously, efficiency schemes assume importance when industrialism has fallen backward in some or all of the above matters. During the first great war, science had made wonderful progress, industrialism was heavily overworked and consequently depreciated and became considerably obsolete. Over and above came the need for reorganisation in the vanquished economies of Europe whose industrialism had been thoroughly disorganised. The fight against disorganisation, obsolescence and depreciation resulted in the introduction of efficiency systems in Germany which afterwards were picked-up elsewhere according to their specific problems. In U. S. A., its main stress has been not on organisation aspect but on standardisation and simplification of processes and the more economical use of labour. Scientific study of human factor in industry reduced much unnecessary strain and increased efficiency. Some industries in America, like chemicals, automobile, steel, etc., considerably expanded. In Japan the movement started on a comprehensive scale and the results achieved were so wonderful that even the great depression could not upset her economy. In Britain a change in organisation was introduced without any element of public regulation and control, with results leading to unemployment. With the coming of the depression the attitude of the state however changed in favour of intervention,

Some aspects of nationalisation will be considered in the present chapter while others have been considered in other chapters. But before that a few problems need be clarified. First, it is well-known to businessmen that efficiency is strictly correlative to cost. A mere extension of size of business or installation of new machinery and equipment is no solution. Existing organisation and possibility of change in it, commercial costs, market limitations, etc., are to be taken into consideration. Take the case of our agriculture. Large scale farming, mechanisation and introduction of agricultural chemistry, etc., are undoubtedly helpful in increasing efficiency; but so long as our agrarian system does not improve, so long as the existing laws of inheritance, subsistence farming and existing system of land tenure continue, tractor will find it extremely difficult to come within the range of reasonable cost. Or take the case of cotton textile or jute industry. However much we argue for better equipment, etc., market limitation cannot be forgotten. It is no use installing expensive machine when the productive capacity of the machine cannot be absorbed in the existing market. It is well-known that in normal times a considerable part of the productive capacity of our jute and sugar industries has to be kept sealed. This simply increases the supplementary cost of business while idle equipments suffer from obsolescence and depreciation due to elemental factors. Hence in the enthusiasm of installing new equipment this factor must not be overlooked.

The second problem is connected with the financial weakness of the concern. I have extensively dealt with this problem in *Indian Business—Vol. I* in connection with my discussion on the various aspects of corporation finance. It has been seen there that institutional saving in our country is meagre, financial reserve for depreciation and replacement of worn-out or obsolete machine negligible and an appreciation of financial strength as a necessity in times of stress in particular almost absent. Financial strength is often considered not from the standpoint of the concern in question but from that of the managing agent and all concerns under the same managing agency swim or sink together. The degree of capitalisation is also defective, some being over-capitalised while others under-capitalised. It must be realised that a fair degree of

capitalisation and financial strength based upon institutional saving are essential for maintaining competitive efficiency over a period of time. This question will assume great importance now because during the past few years our industries have seen considerable depreciation due to over-work, and also obsolescence due to enormous scientific progress, while at the same time their own funds are too meagre to support the change-over and there is no other agency working as yet. Heavy depreciation on the one hand and financial weakness on the other may necessitate a drastic writing-down of capital for many of our concerns, while in others where technical efficiency has been seriously impaired, or where management is deficient and based upon empirical methods, financial reorganisation should be supplemented by amalgamation of the concern with stronger undertaking. This will bring about concentration of business in more efficient plant.

Concentration of business raises the problem of size which has already been considered. In general, leaving aside a few most successful units, there is an optimum range which represents the most successful existence for the industrial undertaking. During the past few years many units below this range have come to stay in our industries. Their elimination or amalgamation will be too slow a process under free competition. At times the tenacity of these weaklings is remarkable and their existence and competition react adversely on the more efficient concerns and tend to depress the whole industry. One is reminded of the following remark of the Balfour Committee that "an operation of cutting out deadwood may be essential for the speedy restoration of prosperity and the resumption of growth for the more efficient branches." Elimination of uneconomic units or their combination with the strong ones is the only solution. At times this in itself has created a problem. For, the monopolistic combinations have at times not eliminated surplus and inefficient plants but relied for their profits, not on greater efficiency and less cost, but exaction of higher prices from the consumers by virtue of their monopolistic positions (cf. jute and sugar industries). In such cases, there is a clear case for state intervention in the interest of the consumers. All the above problems are burning issues in the present-day industrialism in India.

The above are some general problems of rationalisation in

India. In fact, in this country it has made very inadequate progress so far. Take the case of our premier industry. In cotton textile industry, before 1926, rationalisation was not introduced nor was any systematic effort made to reduce the number of workers on the machines or to increase their efficiency. Thus in ring spinning, before 1926, each sider generally minded one side, the number of spindles in this varying from 120 to about 200. In the weaving side, the number of weavers with two looms was more prevalent. Thus of 51,339 weavers in 1923, 48,093 were working with two looms each, while 2,637 were working with one loom. Only a small number of 609 workers were working three and four looms. Thus costs on all items, specially on operatives, were very high when the depression started. In the words of the Bombay Millowners' Association, "in view of the high proportion of the total cost of manufacture represented by wages, reductions in cost of manufacture are bound to be relatively small, if circumstances confide economies which can be made to the other items contributing to the cost of manufacture." Since then substantial cost-reductions have been effected on account of power, fuel, stores and insurance and cuts introduced in the salaries and numbers of supervising stuff and also in the number of superfluors labour. The cost of manufacture has also been reduced by the introduction of high drafting and other improvements in machinery. As a consequence, by 1932, the cost of manufacture of a pound of 20s grey warp yarn came down by over 5 pies, and that of a pound of standard calendered shirting by between 2 and 3 pies. As regards bleaching charges, the reduction amounted to 3 pies per lb. The general aims of most of these schemes were, first, to increase the number of machines attended by one man, secondly, to do away with a certain number of extra men, and thirdly, to grant higher wages to remaining men.

In addition, certain measures referred to by the Facwett Committee as "Efficiency Schemes" had been introduced by the Sassoon & Finlay Groups of mills and in the Kohinoor Mills. In fact, this was the first systematic attempt at rationalisation and its object is "to increase the operative's wage by getting him to tend more machines and at the same time to assist him by introducing better methods of working." The efficiency measures taken have been indicated in Table XXVI.

In smaller units in Bombay, efficiency systems could not be adopted partly due to the fact that production and machinery in many small units were not standardised and partly due to the opposition of organised labour against increasing the efficiency of individual operatives which would reduce the productivity of others in comparison. However, in those mills where efficiency systems have been adopted, the greatest amount of progress has been achieved in ring-spinning department and in loom-shed. In spinning department, the complements per 1,000 spindles have been decreased in many mills by systematic lengthening of frames and an extensive adoption of high drafting. Under pressure of depression, 5 mills consisting of 1,85,000 spindles in Bombay had completely changed over to high drafting while 26 mills introduced the system partially. Twelve mills were working with two sides per man on spinning side and 7 had rearranged or rebuilt their machinery so as to permit of a greater number of spindles being attended to by one spinner. In weaving, efficiency systems, have taken the shape of high speed warping and winding, improved types of cheese and beam dyeing plants, which have made possible a saving in cost of winding and re-winding. A large number of mills had also installed universal winding machines which enabled a larger quantity of weft to be carried out by the shuttle. Automatic looms have however not been installed in large numbers in Bombay because of the huge capital expenditure involved.

In Ahmedabad rationalisation has not made even the same progress as in Bombay. Before 1935 there was practically very negligible rationalisation in spinning and none in weaving. Even after that, the modest attempt that has been made has remained confined mainly to spinning side. In the weaving department, the Advance Mills which had adopted four-loom system had to give it up in 1938 when it became a member of the Ahmedabad Mill-owners' Association. The little progress in efficiency systems in Ahmedabad is indicated in Table XXVII. The deficiency of Ahmedabad in comparison to the British and American standards, even in the spinning section where certain amount of rationalisation has been introduced, is indicated in Table XXVIII.

In other centres of Bombay, only one mill in Sholapur has introduced rationalisation schemes in roving and ring spinning departments. In up-country centres, only in Cawnpore some

rationalisation measures have been adopted. Some mills have introduced high draft system in ring spinning, self-stripping devices on cards, and high speed winding and warping machine in their preparatory processes. Some mills have installed new humidification plants and some have gone in for repairs and adjustments on a large scale, for replacement of parts, and putting up of new and up-to-date machinery and improved methods. A tendency towards better mixing is also apparent. The result of all this has been a change in the character of production of some mills. Rationalisation in the sense of intensification has been applied only in two or three mills. The Cawnpore Labour Enquiry Committee regards this as "a fair amount of rationalisation in various mills at Cawnpore"; but this is nothing in comparison to standards attained in other countries.

Jute industry in India is another old industry and stands in need of rationalisation on many accounts. In its organisation and financial aspects, it is much better than many other Indian industries, though in comparison to western standards it lags much behind. But its productive capacity in normal times is much in excess of requirement and has to be kept sealed. This has made it difficult to scrap the old obsolete equipments. But the greatest defect of the industry lies in its exploitation of labour which will be considered in another chapter. This much may be said here that the industry has been forced, owing to the shortage of trained labour, to employ, under the stress of war, less number of shifters on the spinning frames, without making proportionate increase in wage rates for minding more machines. No change has however been introduced in working conditions and nothing has been done either to increase the efficiency of individual operative or to increase the rate of his earnings. Hence this is only a form of intensification against which labour has real reason for grievance. There is another line in which there is scope for rationalisation, viz., rationalisation of jute products. Some such scheme has been formulated in cotton textile industry whose principal aim is to increase output by confining production only to a limited number of varieties. This will enable each mill to increase production by so adjusting their qualities of production to those specified in the standard schedule as to be able to attain an increase in total production. In jute industry also, there is considerable scope for

reduction in cost and increase in efficiency by reduction in the number of types of cloth and bags at present produced and by concentrating each type to a particular unit. It is also essential to institute research in the nature of demand for various types and to adjust production to demand. The question of scrapping the redundant machinery is also to be considered as a part of the cost-reduction programme.

From the standpoint of efficiency, the iron and steel industry, particularly the Tata Iron & Steel workshop, seems very near perfection. This is the result of the adoption of up-to-date process and extension of the industry in the twenties, and on the eve of the second great war the industry could compete effectively with any country of the world in this line. In recent years, however, the industry is facing some problems owing to increase in costs, particularly due to rise in wages and salaries and reduction in production. The capital structure of the company has also become lop-sided and these require serious revision. In the chemical industry in India, the question of size is important. Besides, the existing units at present use the antiquated chamber process of production which should be substituted by the more economical contract methods.

The case for rationalisation is particularly important in coal mining. In exploiting these mines, there has been some progress towards mechanisation. The earliest mining of coal was restricted to quarrying the outcrops of thick seams, the quarries being extended to the dip, until the amount of over-burden made further exploitation uneconomical. With increased demand for coal, there has been the gradual introduction of steam pump, steam winding and hauling machinery, etc. The introduction of electricity since 1910 has, "with increased efficiency, unlimited range of operation and greater reliability, brought about a gradual change in mining methods." But smaller mines still depend on steam, and the raising of coal mainly or solely by hand-labour is also not altogether absent. The position before the war is shown in Table XXIX. It will be seen in the Table that what to speak of rationalisation, even the first dose of mechanisation is not complete in many mines. Immediately before the war, the use of labour-saving devices was becoming more general. Thus during 1939, 203 coal-cutting machines were used in 72 mines, compared with

186 in previous year. The process stopped with the outbreak of war. The most important line yet to be undertaken lies in the organisation aspect, particularly by the amalgamation of smaller, uneconomical units with the bigger ones, thereby avoiding a huge wastage of coal in demarcation lines and by increasing the efficiency by large scale operation. Recently, the Indian Coal-fields Committee has suggested the introduction of compulsory sand-stowing for purposes of safety, production and conservation. It has also suggested that private ownership of mineral rights in the permanently settled areas of Bengal and Bihar has been responsible for many harmful consequences. Hence the only solution is the state acquisition of mineral rights.

The sugar industry is a recent addition to the list of our industries. Its late-coming has enabled it to profit by the experience of others. And yet there were various deficiencies both in the industrial and agricultural sides. Thus the industry has achieved a higher recovery of over 10 p.c. as against 9.4 p.c. contemplated by the first Tariff Board. The quality of sugar has improved from D24 to E27 and standardisation of sugar has almost become an accomplished fact. The economic unit has also expanded from 500 ton factory as contemplated by the Tariff Board to 800 tons. The acreage under cane cultivation has increased during 1931 to 1941 from 30 lakh acres to 45 lakh acres. The war has however affected the industry adversely owing to doubling of the cost of manufacture, insufficient supply of sugar cane, shorter crushing season and increased costs of material. Besides, the industry has been working under heavy depreciation and without replacement and extension. Since the industry was controlled at an early stage, it has not been able to build up a reserve by which to effect replacements. An immediate replacement of worn-out plants and equipments is essential for bringing the industry up to the standard of competitive efficiency.

The above discussion must have made it clear that to the limited extent to which rationalisation has been introduced in India, it is mostly concerned with the exploitation of labour without trying at the same time to effect improvements in other directions. In fact, this is the reason why organised labour not only in India but even elsewhere has expressed its hostility against such schemes. For, on the one hand, it increases strain and not

so much the wages and on the other, it creates technological unemployment for many. The scope for exploitation is all the more great because of the existence of wide wage-differences. In the words of the Cawnpore Labour Enquiry Committee, "the results of rationalisation have not been reflected in the earnings of the operatives to the extent that one might have expected. This is specially true in the case of the spinning department and other departments where the operatives are paid by time and not by piece. While in some cases the piece workers could derive the benefit of rationalisation by way of higher wages on increased production, we have noticed a definite tendency on the part of the employers to adjust the piece rates in such a way as to limit their maximum earnings. The time-worker has not only not obtained an increase in the wage due to intensification, but his work also has increased." So far as the claim that rationalisation leads to reduced hours of work is concerned, the only instance known to me is the Sassoon group where hours of work have been reduced from 9 to 7 for six-loom weavers. This possibility of exploitation has made labour hostile to efficiency systems and hence wherever these have failed, it is due either to ignorance and lack of understanding of the worker or his definite hostility. Hence their success presupposes the existence of harmonious relation between labour and capital which can be maintained if the latter shares the fruits so achieved with the former on reasonable terms.

The objections of organised labour against rationalisation are three-fold. It is asserted, first, that rationalisation would lead to unemployment; second, that it is closely associated with exploitation of labour, with consequent increase in strain and fatigue; and third, that the increase in earnings of the operative will not be in keeping with the increase in productivity. At times, again, it becomes difficult to measure the increase in productivity. For, if changes are introduced in the technique of manufacture, the increase in productivity, it will be claimed by employers, is due entirely to technical changes, and not to labour. Thus intensification of labour without, or with inadequate, increase in earnings is the invariable result. The typical attitude of employer is like this: "With better grades of cotton, more suitable and careful mixing, suitable machinery and better conditioning within, the

department's work is much easier. There are few breakages, and few stoppages and less running about to do."

A certain amount of technological unemployment is inevitable and unavoidable, and this is undesirable because it comes at a time when unemployment is already a problem. This is at least our experience in Bombay textiles. But then this is no argument against rationalisation. Industries must progress and keep pace with modern development. Unemployment is no doubt an evil, but industrial backwardness is a curse in itself. At the same time, it must be said that the employers must see that technological unemployment is reduced to the minimum and rationalisation is introduced not in the dark days of depression but in normal times. Besides, efficiency schemes should be introduced in doses so that the already-displaced labour gets time to be absorbed. Employment exchanges may be started for reducing the period of unemployment. A scheme of unemployment insurance, supported by the employers and employees and subsidised by the state may be thought of in this connection for ensuring a minimum living-standard to all.

So far as second objection is concerned, the worker should not feel himself over-strained if efficiency methods are introduced after improving working conditions and making time and motion study of the reaction of rationalised work on the mental and physical conditions of the worker. In this country, it is difficult to come to a final conclusion in this respect partly owing to the lack of research in the line and partly because rationalisation in the sense of intensification has taken place only in a few units in Bombay cotton textile industry. But this much may be said that under proper conditions of employment and improved working conditions, rationalisation need not impose undue strain; on the contrary, it may reduce strain owing to increased mechanisation and installation of more up-to-date machines and processes. Thus the Cawnpore Labour Enquiry Committee observes that "when-ever conditioning plants have been installed, and modern methods adopted, to our untrained observation, there seemed to be less strain on the workers, especially in the spinning section of the industry." In Bombay, where intensification has taken place on a wide scale, the Bombay Millowners' Association, according to the suggestions of an expert committee laid down certain condi-

tions in 1934 under which alone rationalisation measures should be undertaken in various departments by member mills. Naturally enough, these suggestions could not be effectively enforced. In spite of this, as Gadgil points out, "conditions in rationalised departments have distinctly improved in recent years and that complaints and disputes on this score of rationalisation are fewer in number than they were a few years ago." But how far this is due to less intensification of labour and improvement in technique and how far due to a turn in trade cycle remains a disputed question.


In order that rationalisation does not lead to greater strain and fatigue, it should be supervised by a committee consisting of the representatives of employers, of employees and with experts and an independent chairman. The existing machinery is defective. Under section 28 of the Bombay Industrial Disputes Act, 1938, the employer who intends to effect any change in respect of such industrial matters as mentioned in schedule II of the Act, the introduction of rationalisation or other efficiency systems of work being one of them, must give due notice of the same to the representatives of labour. If the proposal is objected to, the employer, under the Act, must send a full statement to the authorities within the prescribed time. Thereupon the conciliator is to investigate. The change will be introduced if a settlement is arrived at and the matter submitted to the Registrar. If however the conciliation efforts fail, a full report is to be sent to the government. This is highly unsatisfactory. Rationalisation is a highly technical process and is very much essential for industrial progress. To place it on majority opinion is simply to postpone it or delay its operation. The duty of the government should be to lay down certain conditions of equipment, etc., on the suggestion of experts, to be adopted by industrial concerns before they embark on a rationalisation programme and the supervisory committee must make sure that these conditions are fulfilled. This will be an effective safeguard against intensification. Thus the function of the committee should be regulatory and supervisory in character, (viz., that of safeguarding the interest of labour, particularly in matters of intensification and to see that improvement in working condition, technique, etc., takes place in lines suggested by expert committee), and not simply that of a reporting body as

suggested by the Bombay Textile Labour Enquiry Committee. The principal initiative in matters of rationalisation should rest with the employers.

Regarding the third objection, which in fact is the most important, the view-points of the employers and the employees go to different poles, the former suggesting that rationalisation means no intensification and that they have to spend a lot in equipping up-to-date plants and equipments, etc., and the employees justifying claim on excess earnings. But no party bases its claim on scientific calculation. The fruits must be shared between the two on scientific calculation, so that the incentives of both the labourer and the employer may be maintained. As will be seen later, wage-calculation in our country is the result of bargaining, depending on their relative strength, and not on any scientific calculation of the contribution of labour to the final product. That is why labour in different centres in India have raised different claims as to their share in the fruits of rationalisation. In Bombay they have demanded 80 p.c. of the increased earnings. Actually they were getting 35 to 50 p.c. more in various rationalised works in Bombay and 45 p.c. more in Ahmedabad, the latter being the result of collective bargaining, and not any scientific calculation. Recently Singh and Naidu made a study of the matter in England and America and in a memorandum submitted to the All-India Manufacturers' Organisation they observe as follows: "The employment of labour in America is based on the scientific work-load assessment of a worker after an exhaustive analysis of the time taken for the various operations involved in his work. In this assessment, a worker of average skill and efficiency is taken as standard and due allowance is given for the rest. Operatives of this standard get a standard wage, the more efficient among them being paid a bonus for their superior efficiency. Though legislation stipulates payment of a certain fixed minimum rate individual mills have their own rates above it. Labour is very co-operative and practically no difficulty is experienced with new methods of efficiency staffing or organisation." Similar arrangements should be made in India, after due regard being paid to local conditions, the standard of living, the nature and amount of work done and the capacity of the industry to pay. That will put an end to all troubles. Apart from this, effort should be made to

improve the efficiency of labour. At present, according to the aforesaid memorandum, a "worker in India produces only about an eight-th of the work turned out by an American worker" and it draws attention to the fact that "higher wages and higher standard of life for the worker can be made possible only if his output is increased." Labour should be regarded as much a part of the industrial structure as other plants and equipments. So far the approach is based on the assumption of antagonistic interests of labour and capital. This basis of industrial relation should change. In this respect the efforts of the Tata Company seem remarkable. During the last two decades, it has installed the most up-to-date and efficient plants and equipments, increased the efficiency of labour and given higher wages to the operatives.

That unrationalised occupations often stand in the way of wage-increases is clear from the fact that in most of our cotton textile units there is employment of labour in excess of the normal complement needed in an efficient unit. This excess of overmanning, according to N. H. Tata is as follows:—



In U. S. A.	4.4	persons	are	employed	per	1,000	spindles.
In U. K.	4	"	"	"	"	"	"
In India	14	"	"	"	"	"	"

This over-manning means about four-times more unnecessary expenses on dearness allowance, provident fund contribution, welfare schemes etc., and hence wages for the rest cannot rise.

As rationalisation becomes a general movement, the above objections of labour will tend to disappear. The discrepancies that are to be found when some occupations are rationalised and others not will also go when rationalisation is adopted as an industrial creed. The pressure of organised labour and supervision by the state should be added agencies. Even the attitude of the employer should also change. True, for the short period, rationalisation may be attended with certain evils, like technological unemployment; but in the long run, in a dynamic economy, rationalisation will bring greater gains than losses, and will tend to improve the competitive efficiency and increase national dividend and the share of labour in national dividend.

CHAPTER—V

LABOUR AND EFFICIENCY

STATISTICS ABOUT INDUSTRIAL LABOUR IN INDIA.

An analysis of the statistics of industrial labour in India shows certain interesting things. First, only a microscopic proportion of total population is engaged in industrial occupations. Secondly, the number of industrial labour has not increased on the whole between 1921-41. The number shows an increase for states while that for the rest of India has declined. Thirdly, owing to uneven industrial distribution, the number of industrial labour in different parts of India is also unevenly distributed. Thus Bengal and Bombay have 15 and 5 p.c. of the population respectively; but they have 29 and 23 p.c. of industrial labour. All other provinces, with the exception of a few areas, have a smaller share of industrial population than would be justified on the basis of their share in total population. The industrial population of Assam is due to tea plantation and that of Ajmer-Merwara due to railway and engineering workshops. The recent tendency is for the decentralisation of industry and with it the increase in the industrial population in other provinces. In recent years the industrial population of Bengal has however gone down appreciably and that of Bombay including Sind to a certain extent. The all-India enquiry regarding the structure of working class family in India was carried on by the International Labour Office the results of which are shown in Table XXX. Percentage of industrial population in India and their distribution in different industries are indicated in Tables XXXI and XXXII.

SUPPLY OF INDUSTRIAL LABOUR IN INDIA.

The supply of industrial labour in India was extremely limited and, at times, organised industry had to experience a shortage of labour, skilled and unskilled. Thus tea plantations in Assam are in constant shortage while coal mining experience a distinct shortage in certain seasons. In perennial factories, however, scarcity of ordinary labour does not prevail today and with the decentralisation of industries in up-country centres the problem has

to a great extent been solved. Factors which are responsible for inadequate labour supply include the evils of excessive concentration and difficulty of accommodation, lack of suitable recruiting organisation and lack of any correspondence between wages and standard of living. Since 1925, of course, Indian factories have entered "on an era of abundant labour," a state of affairs which is due not to any attraction provided by industrial occupations but to economic pressure, so much so that the Royal Commission on Labour wrote: "competition among labourers for jobs is becoming keener and keener which makes it all the more important for labour to organise itself and save itself from the danger of exploitation on the part of the employers." To-day the main deficiency is with regard to the supply of skilled and semi-skilled labour, for which there has been a "virtual scramble" and this creates great inconvenience to those lines which stand in need of experts.

In western countries there has developed a supply of industrial labour from districts adjacent to the seat of industry. In India, however, with the exception of centres like Cawnpore and Ahmedabad, the supply of labour comes from a distance and even other provinces. In Bombay it comes mainly from the Deccan and the Konkan, especially the Ratnagiri district, other sources being Cutch and Kathiawar, U. P., Madras, Punjab and the French Settlements. Calcutta is too much dependent on labour imported from other provinces, viz., Bihar, Orissa, U. P., C. P. and Madras. In Madras labour comes mainly from the interiors and a large number is sent out to other provinces, even to Burma. "No less than 95 p.c. of the total inhabitants of Madras city were born in the province itself and of these two-thirds were born in Madras itself; and the bulk of the remaining population came from adjacent districts such as Chingleput and North and South Arcot." This imported labour supply in most industrial centres in India is extremely migratory in habits and this stands in the way of the development of a strong industrial labouring class in this country. Some are pushed from agriculture to industrial occupations owing to sheer economic pressure while most labourers have a village up-bringing and tradition. The effect of this has not been favourable from the standpoint of efficiency. For, so far as labour is concerned, he has not been able to adjust himself to industrial life and has little interest in industrial occupations. Naturally, this reacts

adversely on efficiency and productivity and stands in the way of the growth of a strong labour organisation. The migratory habit greatly affects the composition of labour force in the industry. It will be seen that only a small number of women operatives work in industry, the reason being that many imported operatives leave their family in village home. This disparity of sexes is an important cause of frequent changes in labour force. Another difficulty arises from intermittent supply of labour. It has been the general complaint by millowners that intermittent labour supply necessitates the employment of a large number of operatives, at times inferior and unskilled, thereby affecting the quality of the product. There are people who capitalise this village link as an agency for recuperating mental and physical energy of labour and for the modernisation of the countryside; but it is difficult to make a statistical estimate of above claims nor is such a costly link essential either as a recuperating or as a modernising agency, at the cost of efficiency and growth of a permanent labour force. For, the village link has retained the dependence of labour on agriculture. If a full-fledged labouring class develops, at least a part of vacillating population can be permanently dependent on industry. The village link as an insurance against unemployment and starvation and a vigour-regaining agency, however commendable, does not add to the credit of industry. If industrialism is to develop in this country, it cannot do with a vacillating labour force and the present weakness can only be removed by making industrial life really attractive.

CONDITIONS OF WORK AND EFFICIENCY.

Some people have the wrong notion that Indian labour is inherently inefficient in comparison to the western standards. But this is not wholly true. Racial and climatic factors may make certain differentiation; but it cannot be vital, as can be seen in any first rate industrial concern in India. In fact, the efficiency of labour depends not only on the grade of worker and his working capacity but also on the conditions of work and on the arrangements for maintaining his skill and adjusting the industrial structure to changed circumstances. A foreign observer, Mr. Butler admits, "Mills exist in Ahmedabad and Bombay...where weavers

mind two, four or even six looms. In such cases, wages are higher and hours shorter, but the managements energetically rejected the allegation frequently made in some quarters that workers were indifferent to higher wages or preferred longer hours at a slower pace. In another mill the management claimed that they were obtaining 85 p.c. of the average individual output in their Lancashire mills...In an Indian-owned mill where similar conditions were given, the standard of efficiency was said to be much above the average. The labour co-efficient in the Tata Steel Works is estimated to reach about 75 p.c. of European or American efficiency in some departments." Thus it will be seen that the efficiency of the Indian labour is 'not something fixed but can be changed by providing for better working conditions. Many Indian textile manufacturers would now agree that owing to the installation of improved machinery and constantly improving management, "they can meet European and American competition in their own market." It is therefore essential to consider the deficiency in working conditions in Indian factories and to suggest the line of improvement.

1. Recruitment—Selection of labour is important for having an efficient labour force. But the method of recruitment in our country is neither uniform nor always scientific, but depend on middlemen or on the supply of labour as available at mill gates. In Assam tea-garden labour was supplied by contractors going around the countryside and is still so. In the collieries the contract system prevails which have brought the labourer into most wretched position. This system has not only resulted in a cut in tub rate from Rs. 10 per tub to Rs. 7, and in certain wage rates from 14 annas to 8 annas a day but the dual responsibility has led to a deterioration in working conditions. This has not only resulted in a drop in the output of coal per man-shift but has also led to the growth of corrupt practices affecting the morale of the management. In the factories labour is recruited through middlemen like jobbers, mukkadams, sardars, etc. The system was severely condemned by the Royal Commission of Labour but even after five years of this, in 1934, when the General Wage Census was conducted in Bombay, 135 out of 177 working mills and 12 out of 37 miscellaneous cotton factories stated that their labour was recruited either through jobbers or through both mukkadams

and jobbers. 24 mills and 4 factories stated that all labour was recruited only by foremen or by the heads of the departments concerned and one mill and 7 factories reported that workers were engaged by the manager. These developments are true of smaller concerns, while in case of bigger ones there is hardly any improvement. In some cases labour is recruited at the gate through the jobber. In Ahmedabad, contract system prevails in most of the works in the mills. The contract system also prevails in some other factories in Bombay Presidency, e.g., in some of the printing presses in Poona City and in the polishing department in brass and aluminium manufacturing factories in all centres in the Presidency. Some of the concerns, however, e.g., Government Ammunition and Ordnance Factories, General Motors, Ford Motor Car Co., the Burmah Shell Corporation, Sassoon group of mills, etc., have excluded jobbers and engaged Labour Officers in charge of all matters connected with labour, including welfare work. Wherever this system has been adopted, it has proved to be an unqualified success. It can be improved further by the training of Labour Officers, particularly in matters of personnel management. Upto this time, there is, practically speaking, no arrangement for the training of labour officers except the short course provided by the Bombay Millowners' Association and the training course recently instituted by Calcutta University. The training to be useful must be practical in nature, and should co-operate with the industries concerned. Besides, different industrial centres in India having specific problems, provision should be made for their study. In smaller concerns, the appointment of a whole-time labour officer may be considered as a costly luxury; but several of them in allied lines may jointly have a labour officer, or at least they can improve upon the existing methods of recruitment. Thus the supervision of some responsible officer must always be there in matters of recruitment. Again, old hands must be given security of re-employment, or at least preference at the time of re-employment so that they may avoid jobbers. Besides, holiday allowances, leave rules, etc., should be regularised.

In those concerns where a high degree of efficiency is essential, e.g., in engineering and other workshops, a wide diversity in the methods of employment prevails. Trade tests and a period of probation are almost invariably insisted upon; and in larger con-

cerns like the railways, suitable recruits are engaged as apprentices in different trades and are promoted to the status of full workmen on the completion of varying periods of training.

In case of very big concerns employing a huge labour force, the services of a single labour officer have been found inadequate. Thus the Sassoon group employed 20,000 hands in 1932. Hence on the recommendation of their Labour Officer, they adopted in 1932 a system of "decasualisation" in connection with the employment of substitute labour in all their mills. Under this scheme the daily requirements for such substitutes for each mill under the management were carefully assessed on the basis of average abstentions and substitute employment cards were issued to the required number plus a small additional percentage. Engagement of all substitute labour was thereby restricted to persons holding cards and no outsider was taken in. A subsequent development from this was to fill permanent vacancies, as far as possible, from the ranks of cardholders to the exclusion of jobbers. In the Gokak Mills at Gokak Falls, all labour is recruited through Indian assistant spinning and carding masters acting under the supervision of spinning master and "everything possible is done to reduce the power of the jobbers over their men."

In order to do away with these evils of recruitment, the government has recently set up an Employment Service consisting of a network of employment exchanges, noted elsewhere. The duty of the Employment Service is to get the right man for the job. For the purpose the Service has to undertake: (a) standardisation of occupational terms, (b) technical and vocational training of workers, and (c) registration and maintenance of card indices. This is just a begin and it is not possible to evaluate it at present.

Once the labour is recruited properly, his efficiency depends on hours of work, conditions of work and methods of work, which we shall consider now.

(2) Hours of Work—The problem of the effects of hours of work on efficiency is to be considered from broad social, and narrow industrial, points of view. Without scientific evidence the latter would support longer hours for making best possible utilisation of labour without consideration of its ulterior effect. In the earlier stages of industrialism constant over-work had become fatal, of which cases are so many. Whatever limitations were im-

posed on the working hours were not the result of scientific investigation but of humanitarian considerations, pure and simple. Recent researches have, however, shown that not only from industrial standpoint but also from social standpoint, a limitation of hours of work supplemented by rest-pauses is not only essential for a better and greater output but also for the maintenance of skill and efficiency of worker for a greater period of time. The researches of the Industrial Fatigue Research Board in England show that in iron and steel, tinplate and glass industries, a reduction in the length of the shift is generally followed by an increase in hourly output. This increase is usually small to compensate for short hours; but where the process is continuous, there is generally an increase in output in 24 hours, which may however take from 2 to 13 months for the increase of output to be steady. In cotton textile industry, researches show that one-break day is on the whole preferable to two-break day; but experience suggests that "the actual spells of work under the former system may be too long and that rest pauses within the spell may be beneficial." The conclusion of the Board was applied in practice by one textile mill with favourable results. Regarding rest-pauses the investigation shows that "in light manual repetition work the judicious introduction of a rest-pause of 10 to 15 minutes into a spell of $4\frac{1}{2}$ to 5 hours will be eventually followed by a small but genuine increase in output of the order of 5 to 10 p.c., notwithstanding the shorter time actually worked. According to certain laboratory experiments, there are indications that in heavy muscular work, also, efficiency might be greatly increased by periodic rest-pauses and frequent changes of posture."

Experience in our country also sufficiently testifies to this. In 1908 when the Factory Labour Commission was carrying out investigation, it was found that many textile mills were working from 13 to 15 hours per day with the same set of labour. The long working hours encouraged loitering habits. In 1911 a statutory limit of 12 hours per day was introduced with results profitable and "no one would now expect to gain by working operatives for fourteen hours a day. "Weekly working hours were reduced to 60 in 1922 under the Washington Hours Convention and to 54 in 1935. Opinions differ regarding these reductions since 1920; but in many cases these have resulted in an increase,

and not decrease, in output. "In the dockyards, in some of the larger engineering and railway workshops, and even in some of the textile mills, a 48-hour week is in operation. In one large cotton mill in Bombay three shifts of seven hours each have been adopted. This progressive reduction of hours has led to a greater intensity of work and the workers have neither the time nor the inclination even to smoke or otherwise be idle while on duty... both the workers and the employers prefer a shorter period with more intensive work." Of course, the immediate effect of the reduction of hours of work to 10 was a distinct fall in production in certain processes in cotton textiles, though the fall was not proportionate to the reduction in hours of work. But within a few years the output once more increased and attained a higher level. Recently the Fort Gloster Jute Mfg. Co. Ltd., reported that production costs, already enhanced by the introduction of 48-hour week, have been still further increased as a result of statutory 10 days holidays with pay; but this increase in costs is temporary and, under proper working conditions, must come down at a lower level within a few years. It must at the same time be remembered that a mere reduction in working hours cannot be the sole contributory cause for increase in efficiency; conditions and methods of work must also improve. But then, as the Royal Commission on Labour pointed out 20 years back, "there can be little doubt that, following the change (*viz.*, reduction in working hours), on the average the efficiency of the operatives has risen substantially." It must at the same time be remembered that there is a certain limit below which a reduction in hours of work would, though maintainable by industry by the adoption of shifts, from the standpoint of labour, be unfavourable owing to a reduction in the earning of the worker which is already below the limit of fairness.

Another thing essential for the sake of efficiency is leisure. Continuous work is as much injurious to health and efficiency of labour as overwork. The Factories Act of 1922 provided for a rest period of an hour after every six hours, though this might be split up into two half-hours at the request of the employees, provided not more than five hours' continuous work was done. Nightshifts also are equally injurious to worker, particularly it forces him away from home and family at rest hours provided by nature.

(3) Conditions of Work—Conditions of work imply a lot of things, viz., temperature, humidity, noise, dust, ventilation, sanitary arrangements, safety in mines and factories, etc. Temperature, dependent on geographical situation, is important in heavy work, especially when it involves exposure to heat, and output, both in quality and quantity, is affected by it. Even the influence of seasonal variation is perceptible. Temperature may, however, be regulated by proper ventilation and air-conditioning. In England in tin-plate manufacture, output has been found to vary by as much as 20 or even 30 p.c. as between the coldest and hottest weeks of the year. Temperature also determines accident causation to a great extent. "It has been found in certain engineering processes that, *ceteris paribus*, accidents are at a minimum at a temperature of 67.5°F., and tend to increase as the temperature rises above or falls below this point." India being situated in hot region, labour is susceptible to exertion even by light work. Productivity also depends on proper ventilation. It has been found that even if there is good lighting arrangement output at night-time suffers to some extent both in quality and quantity. If the system of lighting is bad, the quality and quantity deteriorate still further. Humidity is another factor in conditions of work, particularly in cotton textile industry. It has been found that the practice of "steaming" or injection of moisture into the air has two diverse effects. For, while steaming improves the quality of the yarn, it is detrimental to the health and comfort of the worker and hence organised labour is against it. Constant protests from labour resulted in Parliamentary regulation of humidification in England as early as 1911 as a result of which it is allowed only within certain limits. Efforts have also been made in England and America to find out suitable alternatives for sizing or at least to confine the area of humidification to that portion of a loom where the warp is in the process of being woven, without adversely affecting the operative. But these experiments have not been fully successful. In India investigation in this respect was made in 1921-22. It was found that in weaving sheds of many mills the temperature was too high and caused discomfort to the operatives. Several methods of improvement were suggested, e.g., white washing of roofs, spraying of roofs with water, provision of electric fans, etc., but without much effect, and when

the Royal Commission on Labour reported, extremes in both directions were to be seen. The Factories Act of 1934 incorporated many of the recommendations of the Royal Commission in matters of condition of work. In matters of humidification, the existing legislation was expanded and the Act gave power to local governments to authorise an inspector to call upon managers of factories to carry out specific measures for increasing the cooling power of the air, where necessary. Accordingly the Government of Bombay has made rules on artificial humidification according to which under certain specified conditions no artificial humidification will be permitted by the use of steam during any period of the day when dry-bulb temperature of that room exceeds 85 degrees. No rule has however been made regarding cooling which involves huge expenditure. But even after this, as the Annual Report on the working of the Factories Act reveals, the conditions were intolerable. This shows that factory legislation is not effectively applied. Regarding the jute industry, recently, the Labour Investigation Committee has suggested that the mills should introduce humidification plants, cooling plants and other amenities. Many concerns have not only no proper ventilation but also suffer from bad lighting, loud noise, etc. All these taken together not only affect the efficiency in working but also produce deleterious effects on the health of the workers. Of course, noise cannot be totally eliminated, but it can be reduced by the use of rubber bands, etc. The employers should also see that the mill has got good and efficient spare parts and all are in good condition. In these and many other respects Indian factories fall much below the mark and a great deal of improvement needs be effected in these lines in the interest of efficiency.

Recently in June 1947 the Government has set up a special organisation for bringing the working conditions of factory labour in India up to the standard prevailing in leading industrial countries of the world. These measures consist in the first place of advice given by the organisation to the Central and Provincial Governments and states and employers on conditions necessary to ensure the safety and health of workers. Secondly, the organisation acts as a vigorous propaganda centre impressing on employers and workers the need for complying with factory laws. Lastly, it organises training courses for factory inspectors, especially for

new recruits and functions as a centre of technical information and advice and as a venue for discussion among factory inspectors of the country. The organisation is to function in an advisory capacity. The organisation has already prepared a Bill for the improvement of factory legislation in the following lines: cleanliness, ventilation, temperature, dangerous dusts and fumes, lighting, control of glare, welfare measures such as washing facilities, first aid, canteens, shelter rooms and crotches, medical inspection and certification. By way of ensuring the implementation of this comprehensive piece of factory reform, the organisation will offer advice to governments and employers on design and layout of factories, and on the standards of housing, factory construction, conditions of work, health and safety precautions, control of dust, etc.

(4) Methods of Work—Efficiency in working method depends both on the quality of the machine and of the human factor. The efficiency of the machine depends upon its quality and up-to-date-ness. The quality includes the design of which the best criterion to judge is the convenience of the operator and it may roughly be asserted that in many cases a slight modification in the design may increase its convenience. The qualities of human factor are partly acquired from training and partly derived from vocational tests. So far as machine-designing is concerned, our backwardness is two-fold. In many concerns work is carried on with very old machines with defective design. In fact, there is no such thing as technological advance in our country and hence the defect in the machine continues till the improvement is imported. Our workers being mostly unskilled, roughly trained after recruitment in a particular process, suggestion for improvement from this quarter has been practically nil. Vocational test is also practically absent in India. Where the judge of the efficiency of labour is some untrained or semi-trained middleman or where labour is recruited at the gate or through some contractors, vocational test is too much to be expected. Even in those concerns which demand technical skill, the only test applied is some academic qualification, at times supplemented by apprenticeship. Apart from these, a certain amount of physiological and psychological tests in vocational education are essential; but these are totally absent in India.

The productive efficiency can be markedly increased by the adoption of most favourable methods and conditions of work. At

times, when the change is simple, the improvement may be small; but there is no doubt that it increases the productive efficiency of the industry. The favourable effect of this would extend to the whole body of operatives engaged on a given occupation.

It may be difficult to estimate statistically the loss due to the defective character of above-mentioned factors; but it presents itself in higher absenteeism and loitering habits, sickness, fatigue and industrial unrest, which mean a huge loss; but nothing has yet been done to prevent it. It is high time for our industries to consider this aspect of the question and to arrange for a survey in existing conditions by experts. If this is done "even on a comparatively superficial lines, the results...would be such as to persuade the most conservative that here a field of enormous potentialities lies open to exploration in every class of industry." (*Fifth Annual Report: Industrial Fatigue Research Board.*)

INDUSTRIAL PSYCHOLOGY.

In recent years in advanced countries industrial problems have been tackled by the application of psychological methods to the practical solution. The recognition of human psychology in industry is something new, though the ground explored is not yet adequate. Its slow progress is not to be ascribed to the inefficiency of human character, but to the complex nature of the problem which requires constant thinking.

Industrial Psychology is a study in the psychological conduct of those who are engaged in some sort of work, brain or manual. It excludes from its scope only those people who are not engaged in any work or are unfit for it. But this is not all. In industrial psychology it is not only essential to study physiological and psychological structure of different operatives but also to study as to how it reacts in different methods and conditions of work. This is the way of better utilisation of human factor and of reduction of waste to a minimum as also of satisfying the normal aspirations of the operatives not only by giving wages exactly according to productivity but also by giving a chance to each according to his qualification as revealed in the psychological and physiological investigations to occupy a suitable place in the whole organisation and by keeping the door open for upliftment provided the worker

attains an improvement in his mental and physical qualities. Thus conceived industrial psychology, as distinguished from the broader subject psychology, restricts itself to "the material and social environment to which the worker adapts himself while he is at work and by which he is therefore modified. Some of the more important topics...are vocational guidance and selection, time and motion study, hours of work and arrangement of such hours and the relation of sickness and accidents to the material and psychological environment." (May Smith).

There is a wrong notion in some quarters that the industrial psychologist is there to make the worker work to the last ounce of his ability; but this is not a proper appreciation of his work. For, the psychologist cannot neglect the human factor. He is to see that there is no unnecessary waste by the placing of labour in a work which does not suit him and that the labourer gets ample scope of developing his inner qualities and of getting promotion as his ability increases.

A vitally important topic connected with industrial psychology is time and motion study. Its initiator F. W. Taylor used to say. "We can see our forests vanishing, our water powers going to waste, our soil being carried by floods into the sea. But our larger wastes of human efforts are less visible, less tangible and are but vaguely appreciated." He maintained that a better method might exist and this could only be discovered by "an analysis of all the methods and implements in use together with accurate, minute motion and time study." The productivity of human factor is nothing predetermined or fixed; nor is there any constant or uniform relation between the amount of energy exerted and the output produced. It all depends on factors like environment, hours of work, prospect for promotion and change, fair wages, etc. With improvement in these, the same operative working on the same machine can be made to yield a greater output with less strain. This requires a thorough change in the present day rule-of-thumb industrial methods in favour of more scientific study of each and every element of man's work. This also requires arrangement for the training of workers and their proper selection and maintenance of harmonious relations between the worker and the management.

Time and Motion Study, according to Barnes, is "the

analysis of the methods, of the materials, and of the tools and equipment used, or to be used in the performance of a piece of work—an analysis carried on with the purpose of (i) finding the most economical way of doing this work; (ii) standardising the methods, materials, tools and equipment; (iii) accurately determining the time required by an average worker to do the task and (iv) training the worker in the new methods.” Mrs. Gilbreth even goes further. She has described motion study as the philosophy of work, an attitude of mind and a method and a technique. It is the philosophy of work in so far as it is concerned with the causes of effectiveness in work which depend on “the details of the process that are external to the actual activity, viz., the tools and materials used, which should be properly prepared and adequately placed; the regularity of the supply; and the sequences from beginning to end which should be done in the minimum of time;” and also on “the movements made by the worker dealing with the materials.” It is an attitude of mind in so far as every activity is a combination of motions and it must be productive and efficient and give satisfaction. It is also a method and a technique in so far as it shows the way of how best to perform an activity.

Time and motion study has contributed immensely towards increasing the efficiency of labour and eliminating waste. It is based on a minute division of each manual and mechanical operation into its several elements and a study of the time required for the performance of each. Wherever possible, the work is simplified with a view to increase the speed of an individual operative. It is found in many cases that although exceptional industrial skill of the operatives may be due to their natural and acquired abilities, “inappropriate and even unnecessary movements may prove to be the cause of more time taken. Psychology seeks to track down and eliminate such movements on a close examination of the methods followed by the most efficient workers.” This has not only increased the productivity of labour but by making the productivity measurable in each individual case it has also solved one of the vexed problems, viz., that of wage-payment.

In order that time and motion study does not lead to unnecessary straining of the operative, it is associated with Fatigue Research. The psychologist is concerned with removing unnecessary fatigue and reducing that incurred in usual work by pro-

longed experiment and observation in industrial work. An idea of the problems connected with fatigue can be had from the nature of researches by the Industrial Fatigue Research Board in England. The Board started its work with two objectives, viz., first, acquisition of knowledge on the functioning of human factor in industry, and second, an attempt to educate public opinion in industry on the realisation of the proper importance of this knowledge. At first the Board concentrated on certain industries; but subsequently it changed its method of work and instead of taking an industry for investigation, it began to elucidate certain general problems which were of interest to industries, e.g., the effects of hours of work and particularly of their arrangement within the working day and week; personal factor in accident causation; design of machinery in respect of the requirements of the operator; physiology of ventilation; and the rate at which skill is acquired in different occupations. In our country as yet there is no arrangement for any such study. But as industrialism progresses, studies in above lines should be instituted.

Fatigue, as discussed above, is the result of excessive and/or continuous work. Another adverse element in modern industrialism is monotony of work which is due to the continuous turning out of the same standardised product or part of the product. Monotony may also be caused by fixed wages without any chance of increment, lack of facility for training and promotion, insecurity of employment, lack of extra reward for special dexterity shown, etc. Monotony is also caused by inefficient machines and equipments or of their improper designing and installation. It is essential that each of these factors should be considered so that monotony of work may be reduced to a minimum.

The above factors will undoubtedly increase the efficiency of labour. Another factor that helps the growth of efficiency is incentive. Incentive to work can be increased by changing the basis of industrial relationship. Factors affecting this are: fair and adequate wages, satisfactory working conditions, fair and sympathetic treatment, pride and personal interest in work, opportunities for training and promotion, security of employment, etc. It is to be noted that with few exceptions our industrialists have not yet realised the importance of aforesaid factors in the attainment of efficiency. In fact, human factor remains almost totally

neglected. It is true that we are living in an age of mechanisation; but human factor cannot altogether be neglected. If industrialism in our country is to develop, it is no longer possible to neglect these matters altogether but to introduce them into the field of industry so far as our circumstances and resources permit.

CHAPTER VI

WAGES AND EFFICIENCY

PROBLEM OF WAGES:

Before the coming of the factory system, the problem of wages was practically non-existent in so far as "there was probably little conscious alignment of workers, as a section of the community against employers as another, such as developed with considerable rancour when the factory system had become firmly established." The problem of wages has two aspects. From the standpoint of industry, wages constitute an important item of cost and from that of labour, they constitute his earning, his share in national dividend. It is wages that determine his standard of living, his health and outlook, his training and social status, his own health and that of future generation. The problem of wages is how to harmonise these two aspects, "how to combine the maintenance of a reasonable standard of weekly earnings with a maximum of output obtainable at a given wages cost."

The relation between the employer and the employee on the question of wage-determination is in a state of evolution. In advanced countries wage-determination is the result of collective bargaining; but in India it is as yet mostly the result of individual bargaining, what to speak of the more scientific systems of wage payments adopted in other countries. Nor has the system of wage payment supplemented by compulsory arbitration by the state as in Australia and New Zealand. In countries like England, state intervention is looked with disfavour; but even there, in insufficiently organised trades where wages are too low and collective

bargaining cannot be relied upon, some measure of state intervention has been considered essential and Trade Boards have been organised for maintaining a reasonable standard of weekly earnings. No such things exist in India.

The problem of wages in India is not the same as the problem in western countries. In western countries, the economists argue that the problem of unemployment is "due to an open or tacit agreement amongst workers not to work for less." Some economists have even argued for wage-stabilisation as a step to economic stabilisation. In India the problem of wages is not due to the fact that they are high but due to the fact that they are low and the problem is one of how to raise them upto the level of fair living wage. In spite of the fact that wages are exceptionally low in India, employment is not increasing. If "wickedness or folly of various classes of persons in standing out against the working of economic laws" be regarded as one of the causes of unemployment, it must be said that in this respect Indian conditions should favour increased employment, which however it is not doing. Hence so far as we are concerned, the case is not in favour of low wages but for higher wages, which, by improving the standard of living of the worker, would react favourably on his efficiency and productivity.

METHODS OF WAGE PAYMENT IN INDIA

The problem of wage fixation in any country is so varied that no single method is enough to explain it. In India the term, 'Payment of Wages' has a still wider connotation. With one or two exceptions, there is no such thing as standardised rates of wages for any industry or any centre. Rates and piece work prices are at times as much varied as the number of workers, and they not only differ from centre to centre and industry to industry, but also between unit and unit in the same centre and even between individuals in the same unit. There is also a bewildering complexity in the methods adopted for the calculation of wage-rates that at times the whole process becomes too difficult to understand. Over and above come various allowances granted from time to time. All these and several other allied subjects, such as pay periods, duration of waiting period, superannuation benefits and financial

aid, methods of calculating over-time, the manner of dealing with discipline, late attendance, etc., have been covered under the generic heading of 'Payment of Wages.'

To take up cotton textile industry first. As in other industries, so also here, there was no agreed wage rate. In pursuance of the recommendation of the Tariff Board (1927) the Bombay Mill Owners' Association appointed a Special Sub-Committee. The sub-committee prepared various schemes and counter-schemes whose adoption depended on harmonious negotiation between the representatives of both parties. But industrial relations were strained with the coming of the depression. Many mills resorted to wage cuts which intensified the hostility. In 1934 the Mill-owners' Association came forward with a scheme for "consolidated minimum time rates of wages for certain of the more numerically important unrationalised occupations in cotton mills." It was recommended that rates in all unrationalised occupations should be consolidated at a level which should not be less than wages specified for such occupations. As regards piece wages, the Association made no change in existing differences in basic rates in different concerns. The Labour Officers appointed by the Mill-owners' Association and the Government of Bombay have attempted to standardise both time and piece-wages; but the progress made is inadequate. In Ahmedabad rates of wages and dear food allowances were standardised as far back as 1920-21 in spinning side in a limited number of occupations, but in others a wide range of diversity continued both in time-rates and piece-rates. In weaving department, about 50 p.c. of the mills consolidated basic wage rates and allowances for weavers but others "continue to calculate earnings at basic prices plus allowances varying from 50 to 120 p.c. according to awards and agreements. Varying systems of calculations are adopted for different sorts of cloth manufactured but about 30 of the mills which have effected consolidation have reached agreements with the Textile Labour Association not to vary piece prices without consulting the union... With regard to the piece prices for categories other than weavers, no standardisation of any kind has been achieved but in many cases the dear food allowance has been consolidated with the basic prices." (*Report of the General Wage Census.*) In 1935 both employers and workers agreed on evolving a scheme of standardisa-

tion of piece wages the result of which was that nearly 80 p.c. of the wages bill in the industry and 70 p.c. of the workers have been brought under the purview of the various standardisation schemes. In other textile centres in Bombay Presidency, the mills, it was asserted, had "fixed rates of wages," this meaning that no alteration has been made in wage-rates from what they had been during the years of first great war, the adjustments being made only in allowances from time to time. In a few cases wages were determined by demand and supply of labour and hence were susceptible to seasonal variations. In case of skilled labour, however, wage-rates varied almost throughout the Presidency depending mainly on individual skill and efficiency, and in some cases being slightly higher with a view to hold labour.

In Cawnpore, another important centre for cotton textile industry, there is no fixity in wage determination nor is there any similarity with regard to the nature of work entrusted to the operatives having same technical qualifications or to their earning in different mills. The existing disparities are wide and "cannot be explained on any rational basis." Nor are the designations for different works standardised with the result that labourers are most susceptible to exploitation. Hence two types of standardisation are essential, viz., in works and in wages. The result of existing differences and maladjustments was that piece-rates, wherever fixed, were done so arbitrarily by employers and the base rate was so low "that the actual average earning fell short of the earnings of workers on the old system." Another important factor intervening in wage-fixation in Cawnpore has been deductions from wages, some specimens of which were given by the Cawnpore Labour Enquiry Committee (1938) as follows:—

(A) Direct cuts: (i) reduction in rates; (ii) reduction through the abolition of bonuses on production and attendance and reduction of dearness allowance, midday meal allowance and the like.

(B) Indirect cuts: (i) Introduction of new varieties of cloth at rates which do not bring wages to the level of those earned on old varieties. (ii) Reductions of piece-rates to meet unprecedented high production by individual operatives. (iii) No adjustments are made consequent upon a substitution of finer for coarser counts. (iv) Introduction of inferior raw material which affects output considerably. (v) Short work and consequent loss of time and

wages. (vi) Introduction of new methods of work involving a reduction in the number of operatives employed and the consequent extra work that has to be looked to by the workers. (vii) Changes in the speed of machine. (viii) Introduction of the system of giving forced leave instead of the old system of fines which have been limited under the Payment of Wages Act—and introduction of different rates for damaged cloth on the same machine. (ix) Reduction in hours of work since January 1935 and consequent fall in the wages of piece-workers and alterations in the systems of wage payment to time-workers. (x) Deduction of a fixed percentage from wages for the substitution of old machines by new. (xi) Changes in cost of living resulting in reduction of real wages.

In fact, direct cuts and item (ix) in indirect cuts have in themselves constituted about 40 p.c. reduction in wages. Though it is not possible to assign any proper calculable share to other items, yet they must be "quite so important as to make itself felt and make the workers complain against it very bitterly." Besides, while fines and similar other deductions have disappeared after the Payment of Wages Act, 1936, newer deductions have come, and one such deduction occurs owing to forced leave for a week or even more, during which period the worker loses his earning, a loss which on many occasions is much greater than the fines which had to be paid before 1936. Another method of evasion is the introduction of three differential rates of pay for same work, viz., for 'good', 'indifferent' and 'poor' quality. "The 'good quality' rate is the pre-Act rate, while the other two are reduced so as to cover possibly more than what the former fines would have yielded. The wages of the workers are undetermined and remain indeterminate until the end of the wage period when the employer pays at one of the three rates, according to his judgment of the work."

The condition in jute industry is equally worse, although the possibility of standardisation in wage rates is greater in this industry on account of fewer variations in the classes of goods manufactured. And yet in no industry in the world situated in such a circumscribed area is the wages position more inchoate. "The mills grouped under different managing agents work under wage systems which have developed many local idiosyncracies during the long and short years of their existence. Even in mills under

the same managing agents there are differences which, to persons not acquainted with the position, seem incredible." And the position has not improved during the last two decades, though standardisation in wage rates is an easy task in view of the well-knit organisation and concentration of the industry in a single part of the country. "There is no industry in India where the management follows such an arbitrary policy of discharging and expanding the labour force and curtailing and expanding output and hours of employment varying from 45 hours to 60 hours per week, without reference to the wishes of the workers at all...No industry in the world takes such undue advantage of the heterogenous composition of labour hailing from different provinces and speaking different tongues in maintaining such disparity in the standards of remuneration and conditions of employment." In 1929 it was found that in two mills situated in the same area and separated from each other by a little more than a boundary wall, under the same managing agent, there is practically not a single entry of wages which is the same. In three mills under the same managing agent, situated within a stone's throw of each other, the rates in one mill have for many years been higher than those in the other two mills. And the recent investigation by the Labour Investigation Committee, Government of India, reveals that the jute mill worker in Bengal is very much worse off as compared to the prewar period in view of the rise in cost of living. Unlike workers in most organised industries in this country, jute-mill workers receive no profit or prosperity bonus. The apathy of the millowners, absence of strong trade unionism and innate difficulties of the task have prevented any attempt at standardisation of wages in jute industry; but as the Report rightly says, "postponement of standardisation would only be the postponement of an evil which will have to be eradicated some day." It is suggested that at least in case of time-rate occupations which form nearly 60 p.c. of the total, a beginning be made in the matter of standardisation of wage rates. For the rest, it is essential to standardise the occupations first, to group them into half a dozen or even less number of classes according to the degree of skill and effort required and fix a minimum for the lowest paid class, with incremental grades for each class. This will not only result in standardised wage rates but also will deal with the insistent

demand of labour for graded promotions and act as an incentive to them to continue work in a unit.*

In the Railways, before 1914, rates were fixed in accordance with the rates prevailing in other industries. Since the war however certain changes were introduced in order to adjust the wages with changed conditions. But it cannot be said that any uniformity in the fixation of wages existed in different railways or in similar departments of the same railways, although each railway had its own schedule of rates. Pays are generally fixed on incremental basis so that they increase with the increase in experience and age of the operatives. Certain classes of work are divided into grades and promotion to next higher grade is dependent on the occurrence of vacancy and suitability of candidates for promotion. The most common complaint is that there are too many grades and most workers are blocked in lower grades for years. Starting pay is generally given at the minimum of the scale, though higher initial salary is given in case of a man of proved ability. Except in a few occupations where piece wages are paid, wages in other occupations are mostly paid by date or by month. Efforts at standardisation have to some extent been made; but in view of different conditions in different parts of such a huge country they have not met with much success. But this difficulty is not insurmountable provided efforts at standardisation are made on divisional basis. In general, there should be standardised rates for each division, exception being made in cases where material differences exist. Standardisation of rates are particularly essential in those centres which happen to be the terminus for more than one railway. Now that most of the railways have come under one centralised administration, this aspect of the question can be tackled more easily than it had been possible when they had been in the hands of different companies.

So far as railway and government workshops are concerned, the number of posts in each occupation and the scales of pay to be given are fixed by the authorities responsible for their administration and cannot be varied by officers who are actually in charge of the concerns. In almost all cases all posts are graded. The

* Recently on the recommendation of the Industrial Tribunal, 89 Jute mills will have to fix minimum wages.

method of grading is however not the same. Generally speaking, there are two methods. In one case, each occupation is divided into two or more classes, each class carrying a specified rate of pay. In the other case, however, scales of pay are incremental. A combination of the two may also be found in certain cases, when, e.g., each class in a particular occupation has an incremental time scale. Promotion to higher grade often depends on the passing of a trade test. The privately-owned concerns follow, more or less, the method of wage fixation as noted above. But in their case the degree of rigidity as regards the variation of rates by the management is less and the rate for each particular operative may to a great extent depend on merit: In some concerns, the forces of demand and supply are the determinants of wages. Others have no fixed principle but adopt the rates prevalent in other concerns.

Regarding the payment of wages to railway labour, there has been some amount of improvement recently under the operation of the Payment of Wages Act but yet investigations in the working of the Act during 1946-47 shows how much irregularity is still prevalent. According to the Report of the Chief Labour Commissioner for the year 1946-47, the provisions of the Act have prevented the imposition of indiscriminate fines. As the investigation showed, there are still serious gaps in respect of withholding of increment or promotion, demotion, suspension and similar penalties. It was found as a result of investigation that irregularities totalled 4,224 and 3,051 cases involved delays in the payment of wages by way of increments, allowances, leave salaries, etc.; 410 cases were found in which the requirements of the law had been overlooked in imposing fines. Arrangements have however been made for the refund of irregular recoveries and unlawful deductions. The question of introducing a fair wage clause in railway contracts is under consideration. Besides, the amendment of the Payment of Wages (Federal Railways) Rules has brought within their scope contractors employing 20 or more persons daily in any month. Some railways also framed rules regarding the imposition of fines and maintenance of advance registers by contractors.

In sugar industry permanent men are limited and get fixed rates of pay. Labourers engaged in the working period get wages according to local wage rates and also the forces of demand and

supply. In case of those concerns where labour is imported from a distance, certain allowances may have to be given. Some of the concerns pay consolidated rates of wages. Workshop assistants, pan lifters, juice boilers and bagasse feeders are often called upon to give overtime service, the payment for which is not the same in all concerns. In some cases no special overtime rates are paid unless the statutory weekly hours are exceeded; but in others payment for this extra time worked is made in proportion to the monthly rates on the basis of the number of working days in the month. Some of the workers were called upon to do additional duties, quite different from their own work, e.g., loading or unloading of wagons, etc., without any payment. These economy measures are not only harmful and unjust to the interest of labour but also to that of the industry itself. In match industry also no special principle is followed in wage fixation. In some concerns wages are dependent on the forces of demand and supply while in others those in charge are guided by prevalent rates in other concerns for similar type of works. Some concerns take the efficiency of the operative as a determinant of his remuneration while in a few concerns they have fixed rates of wages. Whatever the method adopted, the labourers do not get any extra payment in the form of dearness allowance or bonus. In one case in Bombay Presidency, the dis-satisfaction of labour with the existing machinery for wage fixation went so far that the intervention of the Labour Office was sought. The award fixed the various piece rates which were accepted by both the parties.

A few words may now be said on the miscellaneous groups of industries and the principles of wage fixation followed in them. Some of the chemical and pharmaceutical industrial concerns maintain fixed rates of wages. In some cases demand and supply and personal efficiency were the determinants while in others there were arrangements for periodic increments. Generally speaking, before the war, the rates of wages were consolidated and no allowances were paid. Only some concerns had arrangements for the payment of bonus, either according to full time attendance, or to efficiency or to annual profit. In glass industry fixed rates of wages are paid to workers on the maintenance side. In certain processes fixed piece prices are paid. But with these exceptions all other rates are time rates and are fixed according to the skill of

the individual operative. In paper and cigarette manufacturing concerns, fixed wages are paid in the maintenance, mechanical and power departments as the case may be. Rates in other processes vary according to demand and supply, according to efficiency and similar other factors. In general the rates are consolidated.

It will thus be seen that with a very few exceptions, wage position in all industries in India is extremely hopeless. Not only are the wages extremely low, there is not even a slight degree of standardisation and as between different individuals a lot of injustice is done. This is one of the impediments to the increase in efficiency of industrial labour in this country. Besides, the labourers do not stick and develop interest in a particular concern because as soon as they get slightly higher earnings elsewhere, they quit. This state of affairs can be removed only by the maintenance of standardised rates of pay and increment for each grade of work with arrangement for promotion in case of exceptional skill and efficiency. The industrialists do not seem to be very much alive to this issue. So far the only measure passed by the Government is the Payment of Wages Act, 1936, which is most often evaded, as was noted in case of the railways.

There is not only no wage-fixing machinery in this country but also there is no similarity in a particular type of wage in different centres. For example, time wages in western countries mean hourly rates; but in India they may mean daily, weekly, fortnightly and monthly rates according to the practice of the industry and of the particular centre. Only in a few cases, e.g., General Motors (India) Ltd., time rates are paid on hourly basis. Nor is there any uniformity about the pay period. If effort is made at generalisation, it may be said that wages on the basis of a week's working are paid in the jute industry, coal mines, tea plantations, oil, rice and flour mills, seasonal factories and certain groups of workers in government establishments. Payment on a fortnightly basis ranging between a week and a fortnight prevails in cotton mills in Ahmedabad and payment on a bi-monthly basis in Broach and various other centres in India. Monthly wage payment is prevalent in most occupations, including cotton mills in Bombay. In the Tata Iron & Steel Works, workers on daily rates are paid weekly and those on monthly basis are paid monthly.

It is of interest to note that in the last few years certain indus-

trial concerns have adopted the Halsey Weir or Bedaux Point Systems of wage payment. In 1936 the International Bedaux Co. of New York and Amsterdam extended its activities to India and provide consultant service for all industrial problems of organisation, costing, labour and rationalisation. The company has carried out a large number of studies in the cotton textile, jute, engineering, oil, chemical and cement industries. But it must be noted that before the most up-to-date methods of wage payment are adopted, the industrial concerns must be made up-to-date. For, the most up-to-date methods are based on the accurate calculation of the productivity and efficiency of the operatives. At the present stage they will not be of much help. A more scientific approach will be first to standardise work and wages for different grades of work. As industries become more and more rationalised, the most up-to-date methods of wage payment may be adopted.

METHODS OF WAGE ADJUSTMENT:

We have emphasized above the need for a stable money wage in the interest of equilibrium of the whole economic system. One obstacle to this in this country is the lack of standardised rates of wages in different centres and in different industries as also between different operatives. Another obstacle to this is the fluctuation of money wages. In this respect it is difficult to analyse the situation for want of statistics. Even where some material is available, the difficulties in the way of coming at definite results in matters of wage fluctuation are not inconsiderable. Apart from difficulties due to lack of standardised type of work, standard rates of wages and standard pay periods, there are certain other difficulties as well. Thus when the earnings are not consolidated, extra payments in the form of bonuses or allowances are not rare. Grading of occupations into classes and the granting to new comers of rates different from those paid to the operatives place no less difficulty. A comparison between wage rates at two different times is also rendered difficult because of the changes in the basic units of time for which rates are fixed. At times, again, the rates are fixed according to the forces of demand and supply or according to the ability of the individual and the degree of his competence after trade test, and in the absence of any agreed time

rates, this variation makes comparisons between wage levels at any two or more dates exceedingly difficult.

During the years of the first great war, with rise in the cost of living, the tendency of wages was also in the same direction though not to the same extent as the rise in cost of living. In the interwar period the tendency was, with a few exceptions, for the wage rates to be revised in the downward direction, which was intensified with the coming of the great depression. In fact, the question of wage adjustment with changes in the cost of living is important and has been engaging the attention of experts in the western countries. The most interesting experiment in automatic wage adjustment that has been made in some western countries is that of Proceeds Sharing. The basic principle of this device is that the net proceeds—i.e., after deducting certain items, e.g., standard wages, standard rates of profits and other items of cost from gross sale proceeds—are to be distributed among the labourers and the employers in an agreed proportion, the labourers receiving their share as a percentage addition to their standard rates of wages. If however the proceeds in any year were insufficient to pay standard profits, the deficiency is to be carried forward as a first charge on any surplus that may remain in any subsequent year. Some other methods of wage adjustment have been tried in western countries. One such method is the use of output figure as an index of wage capacity which has been tried in the British coal mining industry; but actual experience shows that this plan cannot succeed; for, an increase in output after a certain point would surely diminish price and set a check to the increase in wages which may have to be curtailed in certain circumstances. Another such scheme is the use of gross receipt figures as an index to wage capacity which has been utilised in some South American States. As a short period arrangement the device is quite suitable; but for long period its use is limited because of the fact that constancy of capital invested is scarcely to be found in a developing industry. Even when capital is contracted, gross receipt becomes a wrong index. The classical economists have suggested unemployment figure as an index to wage payment. The suggestion is based on the notion that whatever unemployment is to be seen it is due "wholly to the fact that changes in demand conditions are continually taking place and that frictional resistances prevent the ap-

appropriate wage adjustments from being made instantaneously." They provide for an increase in wages above the standard rate when unemployment falls below a certain level and a decrease when it goes up above that level. But the plan is not perfect; for, the existence of prosperity in a particular trade, simultaneously with technological unemployment is not quite impossible. Besides, the plan would not find favour with organised labour. One more proposal in this line is the regulation of wages by an index of national production. Although it originated in England, it did not find favour with organised labour in that country. In U. S. A., however, the plan is not only more widely discussed but is defended by labour. "This was due partly to the fact that statistical investigations showed that real wages in America had increased little since 1890 and were accounting for a reduced proportion of the total national income; but in the main it appears to have been the natural outcome of the 'Gospel of high wages' and of the belief that economic stability could be attained only if wages increased in proportion to national production." (Pool) According to the American Federation of Labour, "higher productivity without corresponding increase of real wages means that the additional product has to be bought by others than the wage earners. This means that the social position of the wage earner in relation to other consumers becomes worse...Deteriorating social position—i.e., declining purchasing power of the mass of wage earners in relation to the national product—brings about industrial instability which will develop into industrial crisis. The American Federation of Labour...no longer strives merely for higher real wages; it strives for higher social wages, for wages which increase as measured by prices and productivity."

So far as this country is concerned, the problem of wage adjustment though not absent has not become so very acute as in other countries. This is partly due to low degree of industrial development and partly due to a small percentage of people being dependent on industries. Only when the fluctuation in wages and prices has been enormous has the question become important and the pressure from labour increased. The method usually adopted for the purpose is the granting of dearness allowance and it is usual for these increases in wage rates to lag a great deal behind the rise in the index number of prices. In certain centres, the

regulatory measures cannot truly speaking be regarded as aiming at wage adjustment but are associated with attendance and/or efficiency, as at Sholapur. The allowance given is partly in cash, as an addition to wages, and partly in kind. For sometime in post-war years after 1918 these measures were continued. But with the coming of the slump, prices went down and with them the wages. The question came with renewed importance with the outbreak of second great war. Organised demand for dearness allowance with a view to maintain the standard of living of the workers was made in December 1939 in Bombay and then spread to other centres. The matter was referred by the Government of Bombay to a Board of Conciliation and although conciliation failed, the Bombay Millowners' Association accepted its award and sanctioned dearness allowance at the flat rate of two annas per day of attendance to those whose earnings fell below Rs. 150 and this was to be continued so long as the official cost of living index for the city of Bombay remained between 105 and 123. In Ahmedabad also the matter was first referred to a Board of Conciliation and then to the arbitration of the Industrial Court whose award laid down a sliding scale of allowance varying with the fluctuations in the official cost of living index for Ahmedabad on the basis of a grant of an allowance equivalent to 1/11th of Rs. 3/8 per month for every rise of one point in the index, as compared with the figure for August 1939, in the month two months prior to the one for which the allowance is to be paid. This was the first beginning in India of the payment of dearness allowance on a sliding scale linked up with the fluctuations in the cost of living index.

Even before the above measures were taken, some of the mills in the up-country centres have granted increases in wage rates, immediately on the outbreak of the war. In certain cases the increases were granted as a percentage of total earnings varying according to income groups. The most notable example of this was the Employer's Association of Northern India which divided the workers under its member-mills in the cotton and leather industries group into seven wage categories. The Indian Jute Mills Association granted an increase of 10 p.c. in wage rates for the workers in all jute mills in Nov., 1939 which was later converted into a flat rate of Re. 1/4 per head per week from August 1942. Then came the great inflationary spiral whose effects were the

worst in Bengal and the existing methods of wage adjustment proved too inadequate to cope with the situation. Hence "the general practice adopted in Bengal for neutralising the effects of increasing dearness in prices has been to 'freeze' the dearness allowance granted in cash at the figures obtaining about August-September 1942 and to permit workers to obtain generous supplies of essential foodstuffs and necessities of life at the prices obtaining for these articles at the dates when the dearness allowance in cash were frozen." Be it noted that in the determination of the dearness allowance, the employers in Bengal do not follow any definite formula coupled with the fluctuation in the cost of living. Even in those cases where some measure is adopted, it is not so very scientific as in Bombay or Ahmedabad. Thus while in the latter centres the schemes vary the rate of allowance for every change of one point in their cost of living indices, the changes in case of the mills under the Employers' Association of Northern India take place only when the fluctuation exceeds 20 points. Another point of difference between the two lies in the fact that while in the former case, a uniform rate of allowance is given to all workers, in the latter case the rates of allowance vary according to income groups fixed for different types of concerns.

These are very minor efforts at wage adjustment in this country. That they are inadequate is clear from the fact that while prices have gone up by nearly four times, the rise in wages is hardly 100 p.c. and in most cases much below this as can be seen from Table XXXIII showing war time changes in wages in some of our manufacturing industries and percentage increase in wages. The problem is every day becoming important. But then the difficulties in the way of wage-adjustment are many. As at present, there is no standard basis for the calculation of profits, nor of depreciation, dividend and remuneration of managing agents. Any decision in these matters taken by the management may be justified on some ground or other. Unless each of these items is clearly defined and a standard set for each one of them, it is not possible to adopt any method of wage adjustment which may receive the willing support of organised labour. Efforts have been made in centres like Bombay and Ahmedabad to settle the matter by referring it to the Board of Conciliation; but so long as the above matters remain undecided and unless definite stan-

dards are set for them, "it is difficult to conceive a workable basis for automatic adjustment of wages by any collective agreement."

Another method of wage adjustment is participation in profits. In this matter the demand of labour in this country has increased since the outbreak of the war. Thus in 1940 the Govt. of Bombay enquired of the Bombay Millowners' Association whether it was prepared to give a war bonus to the workers if increased profits were made by the industry as a result of the war conditions. The matter was again taken up in 1941 when the Association decided that the member-mills should grant to their workers a cash bonus equivalent to $12\frac{1}{2}$ p.c. of, or two annas in the rupee on, their actual earnings for the period from 1st January to 31st December 1941. In subsequent years the bonus was renewed with certain modifications. In 1944 the Bombay Girni Kamgar Union sponsored a demand for a bonus equivalent to three months' wages to be payable in one lump sum without any condition; but the demand was not met. In Ahmedabad also war bonuses were given.

The question of profit-sharing has received added importance recently owing to the appointment of a Committee by the government for the consideration of the whole question. The scheme has been opposed by practical businessmen mainly on the ground that profits are uncertain and hence a share in an uncertain factor would not result in a permanent improvement in the standard of living of the worker. As Shri G. D. Birla has pointed out, the labour "does not get any share in profits when there is none and even when he gets it in good years, he cannot afford wide fluctuations in his earnings...This will very unfavourably react on his psychology. Once he raises his standard of living on the strength of his good earnings in one year, it will be impossible for him in the next year to curtail this expenditure when his income goes down." An analysis of profits shows that over a period from 1930 to 1947 very few concerns have on average been able to declare a dividend of 5 p.c. on an average, and if that basis is taken as the minimum there would be no surplus profit left over a period to be shared between workers and shareholders. Besides, there is no close and definite correspondence between profit-sharing and efficiency in production which is our immediate objective. This is the capitalistic way of evading the issue. No body has suggested profit sharing on prewar income basis. It is only a device for

automatic wage adjustment since the war and at present when profits have been fabulous, whereas wages have been lagging behind. But the psychological gratification it provides is, as will be shown later, more important. If it is suggested that profits fluctuate from year to year and hence the scheme will provide an uncertain addition to income, it may be pointed out that the share may be added, unconditionally, to provident funds or given in the form of shares to labourers which will provide basis for labour co-partnership in future. The aforesaid Committee on profit sharing has admitted that "Profits made by industry depend on many factors besides labour, and to that extent, do not bear any measurable relation to what labour does or does not do. An undertaking in which labour has performed its full part might fail to make any profits because of other reasons, while large profits may be made inspite of irregularities or slackness of labour." The Committee has however recommended six industries, viz., cotton textiles, jute, steel, cement, tyre and cigarette manufacture, as sectors in which profit-sharing may be tried in first instance for five years. The Committee is conscious that any scheme of profit-sharing will not of necessity increase production; but in so far as it will secure for labour a share in management it will create a favourable psychological atmosphere which is expected to be helpful in the promotion of industrial peace.

Some people have suggested the fixation of fair return for capital. The suggestion however attractive at first sight is not workable. For, any fixation of return for capital presupposes that the industry will not suffer from any loss which is impossible or that the government assures this minimum even in bad years which is fantastic and dangerous. For, if such a return is guaranteed, efficiency of the industry would be affected and the management will not strive to increase profit above this level nor try to check the losses which will be insured against. Hence practical men in this country are in favour of a production bonus connected with individual efficiency which while securing contentment among labour would provide an incentive to produce more. In fact, recently, the Tata Iron & Steel Co. has introduced such a scheme. On 1st April, 1947, the company introduced a new bonus on per capita production, over and above the graded rates of basic wages. The bonus will vary from a minimum of 10 p.c. of the basic wages ac-

cording to individual performance. It is expected to average 50 p.c. in the case of production personnel and 40 p.c. for maintenance staff. In addition, employees other than supervisory staff will be paid a good attendance bonus of 10 p.c. of their basic wages or 20 p.c. when they are not entitled to the performance bonus. On 1st October 1947, the above scheme of performance bonus was modified. According to the revised scheme, all departments are to receive a uniform bonus calculated on the average production of finished steel for which a target of 61,200 tons a month has been fixed subject to revision in the event of any modification or addition to the existing plant's production capacity. The present attendance bonus is to continue. It is expected that this scheme would secure a reasonable addition to the income of labour, without adversely affecting production and efficiency. But really speaking a scheme of production bonus, however desirable, will be hardly connected with automatic wage adjustment which is essential in times of high prices and rising costs of living, nor does it weaken the case for profit sharing.

REAL WAGES: NEED FOR A FAIR MINIMUM WAGE:

More important than money wage for labour is real wage, wage in terms of goods and services required for maintaining the minimum standard of living of the labourer. In this country any consideration of real wages is rendered difficult partly owing to the lack of figures for money wages for various centres and partly to the lack of cost of living index number properly compiled and weighted. Bombay is the only province where the Labour Department compiles a regular cost of living index number for Bombay City, Ahmedabad, Sholapur and Jalgaon. Recently other provinces viz., Madras, C. P. and Berar, U. P., Bihar, Orissa and Punjab and also Mysore State have started the compilation of the cost of living indices; but they lack in uniform basis. Thus while the base for the Bombay Cost of Living Index is 1933-34, that for Ahmedabad 1927, Sholapur 1928, Madras City 1936, other centres in Madras July 1935 to June 1936, C. P. & Berar 1927 and subsequently changed to 1939, U. P. 1939, Bihar for five years ending December 1914, Punjab for the quinquennium ending December 1935, and so on. The methods of compilation also are

not the same and hence any comparison is rendered difficult. Hence in 1942 the Govt. of India, in consultation with the Provincial Governments, decided to launch upon an all-India scheme for the preparation and maintenance of working class cost of living index numbers for selected centres in British India. Over 25,000 family budgets have been collected in some 28 centres, the base being January-December, 1944. When the results of this investigation are published, they are expected to fill up a gap in the field of industrial statistics.

The price level of commodities entering into the family budgets of the working class families and the relative variation of prices of different items have an important bearing on the standard of living of the workers as also on the determination of real wages. And if a minimum standard of living is to be preserved, it is essential to adjust nominal or money wages with changes in the cost of living consequent upon price fluctuations. For some time, the Government of India published relevant figures in *Prices and Wages*, but in view of the unsatisfactory character of the figures for wages, the publication was discontinued. The Report on the Enquiry into the Rise of Prices in India showed however a rapid rise in the nominal wages throughout the period of their investigation (1890—1912) for all classes of labour; but it has been estimated that the prosperity was inadequately shared by industrial labour, whose earnings rose only to the extent of 7 p.c. and in one or two industries. e.g., sugar and tea, there was no increase in nominal wages at all. During the years of war, 1914-18, and for some time in postwar years, the rise in prices continued and although from 1922 onwards the tendency was towards a decline, yet the prices continued to be sufficiently high, much higher than prewar figures up to 1930. It has already been seen that certain efforts were made to secure a certain degree of wage adjustment through dearness allowances and the granting of bonus; but on the whole wages lagged far behind. "The wage earners felt the pressure of increased prices before they obtained wage increases and have latterly also suffered from the trade and industrial depression." (Anstey). On this point a considerable degree of confusion prevails. It has been pointed out that since 1922 prices began to decline and "although a slight fall in wages has taken place, the fall has not been commensurate with that of prices. The evidence of every industry

bears testimony to increases in wages in recent years in some cases so that altogether the wages of those actually in employment are higher than even before the war." The comparison should however not be made in absolute figures but in relation to cost of living index. It is true that there were rises in wage indices for all centres; but the lag was not the same and in some cases wages were lagging behind cost of living indices upto the year 1929. This was in particular the case in centres like Ahmedabad, Calcutta, Cawnpore and Jharia in 1929. Even in other centres it cannot be said that the workers were better off in view of a very narrow difference in figures for cost of living and wage indices. In Bombay nominal wages lagged behind cost of living upto 1928, in Madras upto 1921, in Nagpur upto 1922 and in Jamshedpur upto 1923. The fact is that wage rates granted in India are mostly low and unconnected with productivity. The excess of wage indices over cost of living indices lead us nowhere.

At one time the Government of India considered it essential to collect statistics of labour and in this respect inspiration was received from the International Labour Organisation which encouraged the formation of official organisations for collecting information regarding labour and dealing with labour problems. But this stimulus proved short-lived and the Labour Bureau that was organised under the Department of Industries disappeared when the "Inchcape Axe" fell on it. The matter was entrusted to the Provincial Governments, of which Bengal and Bombay established two Labour Bureaux and Madras appointed a Commissioner for Labour. So far as other Provinces were concerned, the matter was left with the Departments of Industries. And yet we have no figures to judge whether wages paid were sufficient to meet the cost of living. As the Royal Commission on Labour noted regretfully, "we find ourselves crippled by past neglect in this direction. The material available is inadequate as a basis of any complete treatment of the worker's ills. Even to such an elementary question as the extent to which the workers' earnings suffice to provide for their necessities no precise answer can be given." Even now the situation has not much improved in this respect. Some investigation was made by the I. L. O. in the average monthly incomes and expenditures in some of the centres in India. A more detailed enquiry is however available for Bombay

Presidency. The first enquiry does not give us a correct idea of economic condition of working class population; but it only shows how the income of the operative is distributed over different items of expenditure, and this is quite a different thing. It has nothing to do with fair standard of living which must be assured to each and every operative.

Before considering the question of a fair standard of living, it is essential to note two things, viz., structure of working class families and average monthly incomes and expenditures of these families. For the whole country the only survey is that conducted by the I. L. O. regarding the structure of working class families. The results of that survey are given in Table XXXIV. The constitution of a family, particularly Hindu family in India, presents some interesting features both from economic and sociological points of view. In a joint family the head of the family is called upon to support not only his wives and children but some others who are dependent on him. For this reason, two types of families have to be distinguished, natural families and joint households. A natural family is constituted of those who are the natural members of a family and have a right to be fed, clothed and housed by the head. A joint household is constituted not only of natural members but also of other relatives who live together as one household. For such families, we have figures only for Bombay and Ahmedabad which are interesting and are given in Table XXXV.

Let us turn next to average monthly incomes and expenditures and see in what proportion the incomes are distributed over different items of cost. For this we have got prewar figures only; but a rough idea as to the proportion of expenditure can be had from these figures, as shown in Table XXXVI borrowed from *Industrial Labour in India*, (I. L. O.). More detailed survey is however available for Bombay and is shown in Table XXXVII. It will be seen from both the Tables that 50 p.c. of the income is spent on food and the rest on other items, the balance remaining after all expenses are met being a negligible amount and in some cases there being no balance but a deficit. Besides, in lower income groups, even under existing standard of living and prewar low prices, the existing income was not sufficient to meet all expenses and hence indebtedness is the greatest in lower income

groups. This is a very tragic story and does not add to the credit of the administration or prosperity of the country. Hence the question is this that if the worker finds it difficult to maintain his standard of living how can the problem be solved? Not only that; a more fundamental question is, whether existing standard of living is sufficiently high, and if not, to what extent it should be raised and how. This, in other words, is a question of determining the "living wage standard." In determining this standard, it is essential to calculate the requirement of body along with a certain amount of comfort as the general economic situation of the country can permit and when these are calculated with reference to existing price level, they constitute the minimum below which wages should never go.

What should be this standard then? This should be determined from different items of expenditure in working class family budget for an average family. The size of the average family is however not the same but varies in different parts of India. Thus while in Bombay and Ahmedabad the size is 4.80 and 4.00 persons respectively, that in Bengal, Bihar and Orissa, and Madras 5.31, 5.53 and 5.88 persons respectively. Roughly speaking, a family of 5 persons seems to be the all-India average. Converted into consumption units on the lines suggested by the Bombay Textile Labour Enquiry Committee, viz., one male = 1, one female = .8 and 3 dependents or children = $.6 \times 3$, it comes to 3.6 consumption unit. But there is no certainty that all dependents will be children, particularly in joint families. Even in households, adult or aged dependents are very common in India. Hence a more reasonable calculation of consumption units in India would be not less than 4.

Now we should consider a living wage standard for India. We have seen that in working class family budgets food occupies about or more than 50 p.c. of the earnings of the operatives. And even then the calory value of food available from this expenditure is not upto mark. The effect of good and balanced diet on the health and efficiency of the worker is very great and that is why workers from those parts of India which have a more balanced diet give a better account of themselves in general. This is clearly reflected in the fact that the earning capacity of the operatives from different provinces vary directly with their food which has

a bearing on efficiency. Table XXXVIII taken from the Bihar Labour Enquiry Committee clearly illustrates this point. Thus diet is an important factor in determining the efficiency of labour. According to the studies of nutrition experts, a well-balanced nutritive diet for an adult person in India should be as follows:

(Ounces per day per adult)			
Cereals	... 16 .	Fruits	... 2
Pulses	... 3	Fats & oils	... 1.5
Sugar	... 2	Whole milk	... 8
Vegetables	... 6	Fish & Eggs	... 2.8
· (or Meat)			

The energy value of above diet is 2,600 calories. This is "far below 'generally accepted' western standards, because there is no point in putting forward standards out of all relation to reality... In practice the standards recommended by the laboratories are set so as to represent an improvement on the existing level of diet among the poorer classes in India, as discovered by field investigations. At the same time, they represent a not impossible ideal in relation to present economic conditions—or in other words, a goal to be aimed at which is not too far out of reach." (Dr. Aykroyd). Thus 2,600 calories per day may be regarded as standard Indian diet. Making allowance for wastage in preparing food and also at dining table a slightly higher figure for total calories consumed would be more accurate a calculation. At prewar prices, the expenses of food for an adult would be between Rs. 5 and Rs. 6 per month. Therefore for a balanced diet for an average Indian family consisting of 4 consumption units, a sum between Rs. 20 and Rs. 24 will be essential. Making allowance for a three-times increase in prices, the expenses on food will be three times this figure, i.e., between Rs. 60 and Rs. 72 per month.

No less important is clothing. The quality and quantity of cloth required is not the same but varies according to climatic conditions and social requirements. India having different climatic and social standards, it is difficult to lay down a uniform standard of clothing requirements. According to certain estimates, the consumption of cloth per head was about 16 yards in prewar years; during war years and at present it has definitely gone down. Under Indian conditions, according to the National Planning Committee,

a minimum of 30 yards of cloth is considered essential. It is of course true that scant clothing in a climate like that of ours will not on the whole make our workers inefficient; but then there are certain standards of human living which should not altogether be neglected; and if we take them into consideration a greater expenditure per head on clothing becomes essential.

The next important item is housing. This also depends on two factors, viz., physical requirements and social standards. According to the Rent Enquiry Committee, Bombay, "It is desirable to discourage construction of one-roomed tenements; but wherever they are found necessary, they should not be of less than 180 sq. ft. in size and should not accomodate more than 4 persons." Thus 180 sq. ft. may be regarded as the minimum area essential for a family of 4 in cities like Bombay; in less crowded towns, a bigger area may be provided. But at present this minimum requirement of housing is not satisfied. For example, in the Bombay Province, the average floor space per person in industrial areas was 27.58 sq. ft. in Bombay Island, 43.04 sq. ft. in Ahmedabad and 24.03 sq. ft. in Sholapur in 1938. During the war overcrowding and congestion have increased. The floor-space available to a worker and his family in 94 p.c. of the cases in jute mills was less than 100 sq. ft. The rooms are also "generally badly lighted and ventilation is altogether inadequate." This is far below the minimum required. Taking the minimum of housing requirements as laid down by the Bombay Rent Enquiry Committee, it has been calculated by the Bombay Textile Labour Enquiry Committee that there will be an expenditure of Rs. 12 for Bombay, between Rs. 6/8 and Rs. 7 for Ahmedabad and between Rs. 4 and Rs. 4/8 for Sholapur. This is far above the present expenditure on this item. Since this calculation rent has gone up all the more.

Apart from the "physiological needs of life," another very important item having a direct bearing on efficiency is the health of the operative. The question is closely linked up with food, clothing and housing. Whatever that may be, the general standard of health of the Indian workers is poor and tells adversely on their efficiency. This ill-health of an average Indian makes him an easy prey to various diseases and the country losses every year a large proportion of her human resources. Until recently it was believed that some of the diseases cannot be combated, but the

development of hygiene has gone very far and exploded this belief. "The experience of Malaya and the Netherlands Indies has shown that all these diseases can be greatly reduced, even if they cannot be entirely stamped out, by the expenditure of sufficient money and by organisation on the right lines. It has also shown that their subjugation has an enormous influence in increasing labour efficiency and reducing labour costs." (H. Butler.) According to expert estimates, the average number of deaths resulting every year from preventible diseases is about 5 to 6 million. Most of these diseases are poorman's or deficiency diseases and they spread very rapidly among underfed and ill-nourished population. The consequence of this ill-health from the standpoint of national dividend is "that the average number of days lost to labour by each person in India from preventible diseases is not less than a fortnight to three weeks in each year; that the percentage loss of efficiency of the average person in India from preventible malnutrition and disease is not less than 20 p.c.; and that the percentage of infants born in India who reach a wage-earning age is about 50, whereas it is quite possible to raise this percentage to 80 or 90 p.c." This is quite a preventible wastage and the problem, not only on moral grounds but also for economic reasons, must be solved without delay. "No industrial edifice," as the Industrial Commission pointed out three decades ago,—and it remains true to this day,—“can be permanent which is built on such unsound foundations as those afforded by Indian labour under its present conditions.” In this country the expenditure on health at present is not uniform throughout the country. Thus some family budgets in Bombay show an average monthly expenditure of Re. 1-2-9 on health, whereas that in Jamshedpur Rs. 0-7-8 and in Bihar coal-fields Rs. 0-3-4. What is more deplorable is that the expenditure on indulgences like drink and drug, tobacco and *pan*, is no less than the expenditure on health and at times is far in excess of the latter. Thus while a miner in Bihar coal-fields spends Rs. 0-3-4 on health, he spends Rs. 0-10-3 on total indulgences. It requires a constant propaganda and education for saving the labourers from these reckless expenses.

Equally important with the health of the body is the health of the mind which is dependent on adequate arrangement for recreation and amusement. Recreations in the form of social

ceremonies and festivals most often become a burden rather than an object of relish for most workers. Another recreation often resorted to, but being injurious to efficiency is the various types of indulgences, including drink. But so far as wholesome recreations are concerned, expenditure incurred is extremely meagre and most often no expenditure is incurred on them. That is why the health of the mind of our workers is at such a low level which cannot be said to be refined. The health of the mind depends to an enormous extent on education. But in India practically the whole mass of industrial labour is illiterate with consequent effects on earnings and efficiency. It has rightly been considered that extreme forms of poverty in India are due to ignorance and illiteracy and that a certain dose of education should constitute a part of the minimum standard of living. As the Whitley Commission pointed out, "in India nearly the whole mass of industrial labour is illiterate, a state of affairs which is unknown in any other country of industrial importance. It is impossible to over-estimate the consequences of this disability, which are obvious in wages, in health, in productivity, in organisation and in several other directions. Modern machine industry depends in a peculiar degree on education, and an attempt to build it up with an illiterate body of workers must be difficult and perilous." To be machine-minded lies at the root of efficiency of the operatives and this is only possible when the worker understands the machine. This requires a certain amount of primary and technical education. Whereas in India lack of education among industrial workers prevail, the worker cannot be a master of the machine. He tends the machine as he has been told to do; he can neither make the machine his servant, nor utilise his inventive genius, if any. Besides, lack of education of the operative is responsible for many of the accidents which could have been prevented by an expert worker. Thus apart from the health of the mind, even for the sake of efficiency, education of the operative is essential. In the calculation of a fair living wage this item cannot be left out.

It is thus clear that the incomes of the operatives fall below the minimum requirement of a fair living standard. The situation becomes worse still when for a number of four consumption units there is only one wage earner. It has been found by investigations in Bombay that in all income groups, families with one earner

constitute the majority, being about 54.45 p.c. Families with two earners constitute about 34.96 p.c., the rest being families with more than two earners. It may be argued that the wives of the workers can undertake some work, e.g., domestic service and thereby add to the total family income. In fact, some of them are actually so engaged; but their number is very small. As the Bombay Textile Labour Enquiry Committee points out, "in the vast majority of cases, the wife was not, in actual fact, in any employment. Of the natural families contained in the family budget studies, 71.65 p.c. in Bombay and 74.40 p.c. in Ahmedabad had to depend on the earnings of only the head of the family." In Bengal, women will never undertake such jobs for social considerations. Hence for an average family in India the earnings of a few women folk cannot be regarded as a standard case. This being the case, and the power of organised labour being insufficient to raise the level of wages by collective bargaining, the only solution is the intervention of the state in the form of fixing minimum wages. It is often argued that the fixation of minimum wages at a high level would simply facilitate the indulgences by the operatives, and hence wont improve efficiency; but this can be checked by giving higher earnings not in money but in kind thereby improving the condition of labour and ensuring a fair standard of living. The force of international competition is there; but then this cannot be met by keeping wages low. Foreign or domestic competition can be met only by increased efficiency. If this is not enough, there are a thousand and one devices for protecting domestic industries and at the same time maintaining wages above the prescribed minimum.

Minimum wage legislation is a part of the social security programme. The immediate object of such legislation is the raising of wages of certain groups of workers who, owing to insufficient organisation or to some other reason, have not been able to get a fair amount of wages. Thus the primary purpose of minimum wage legislation is to eradicate the evils of sweating. In course of time, however it became a part of the greater national programme of manufacturing and improving the national standard of living and of preserving the conditions of industrial peace. Interest in minimum wage convention in India has received a considerable stimulus from the Draft Convention on the subject adopted by the International Labour Conference of 1928. The Convention con-

templated the creation of such machinery only in case of trades or parts of trades in which no arrangements exist for effective regulation of wages by collective agreement or otherwise and in which wages are exceptionally low. The Govt. of India came to the conclusion that they could neither enter into any commitment nor give any indication of possible ratification until a thorough enquiry had been held in the practicability of establishing Wage Boards in India. The Royal Commission on Labour to which the question was referred offered no concrete suggestion. It simply pointed out that before a wage-fixing machinery could be set up, industries in which there was a strong presumption that the conditions warrant detailed investigation should be selected and the survey of the conditions in each such industry should be undertaken as the basis on which it should be decided whether the fixing of a minimum wage is desirable and practicable. The coming of the depression resulted in the postponement of the matter till an indefinite period.

Some of the Indian industries, however, adopted schemes on their own initiative which roughly approximate the minimum wage schemes. One such scheme was adopted by the Bombay Mill-owners' Association which adopted a schedule for its member-mills known as a Schedule of Fair Occupational Wages. It covered certain non-rationalised time-work occupations and the total number of persons included would not be more than half of the total number of persons employed in the industry. Protection was offered to the industry "by compilation monthly of the average wages earned." The minimum adopted for a weaver was Rs. 35 per month and if it was found that wages of weavers in any mill were below that level, the Association asked it to bring the wage level up. So far as other piece workers were concerned, no such scheme was in force. The Association however had nothing to do with non-member mills where the earnings were considerably below the average wages paid in member-mills. In Ahmedabad some scheme of standardisation of wage rates was in operation. So also in the Tata Iron & Steel Co., where there was in vogue a minimum wage of 8½ annas per man and 7 annas per woman for all its workers. In case of contractors' labour a provision has been introduced in the contracts as a result of which they have to pay a minimum of 8 annas per man and 6 annas per woman labour.

But now the question is whether this minimum wage provided for a fair standard of living; for the one need not ensure the other automatically. And investigations show that not only in Tata Company but also in the cotton textile industry, the minimum wages fall far below the fair living standard wage. And even this is honoured arbitrarily. Thus it was pointed out by the Tata Workers' Union that in some departments the Company takes advantage of chronic unemployment at Jamshedpur and replaces the permanent workers by temporary hands on lower rates of pay and the latter remain temporary even after 3 to 5 years of service. Thus even the minimum wage that is prescribed is often violated. Hence it is essential that the scheme of minimum wages should take note of fair standard of living and it should be strictly enforced by the state in order to ensure the minimum to all.

During the years of second great war, as is wellknown, the cost of living has abnormally gone up. Since there is no machinery for automatic wage adjustment and since the increases in wages by dearness allowances did not exceed 33 p.c. of the existing wage level—in many cases the figures being as low as 10 p.c.—while the prices were three times or more high than those before the war, the standard of living of fixed wage-earners has deteriorated tremendously. The calculation that we have made for a fair living standard wage is on the basis of prewar prices and needs revision according to proportionate rise in prices at any particular moment. This assertion of course conflicts with our case for a fixed wage level. But the conflict is not real. For, so long as the entire economic system is in disequilibrium, there is no sense in having a rigid wage level. Thus when the price level is more or less stable and the economic system is in equilibrium, wage level will also be stabilised. But so long as that is not the case, the minimum wage should vary with variations in prices so that the real wages and standard of living of the workers are not disturbed. For this purpose, it will not be out of place to suggest the institution of a Wage Stabilisation Fund formed out of high profits in prosperous years and this fund may be utilised for wage stabilisation in lean years. Another machinery which has proved very effective for the purpose is the establishment of Wage Boards for different industries as has been done in Britain. These Trade Boards—that is the name given to them—are concerned with the

fixing of minimum rates of wages which are legally applicable throughout the trade and are enforced by inspection and other methods at public expense. The wage boards that may be organised for some industries should prepare budgets for a reasonable and fair standard of living of the workers and at fixed intervals should see that the changes in price level that may take place from time to time are sufficiently met by an alteration in the amount of bonus or dearness allowance paid. It should be borne in mind that the effect of a rise in prices falls more on those who are in the lower income group and hence the allowances given should be on a sliding scale, the percentage wage increase being greater for those who are in lower income groups and less for those who are in higher income groups. In order that the working of the wage boards may be successful, it will be the duty of those responsible for the economic administration of the country to try to secure a certain degree of price stability. The machinery may be supplemented by a wage stabilisation fund of which we have already suggested. This need not be a burden on the industry, for, as already suggested, the fund can be built up in times of prosperity. For the present it can be built up from a part of excess profits that will be returned by the Government of India to the industries. Be it noted that the machinery of the wage board will be of a specialised character each trade having its own wage board. For, conditions are not the same in different trades and the determination and control of what the wage shall be should rest with the trade itself. It has been the experience of those countries which have general trade boards for all trades that they do not work so successfully and its prevalence is therefore becoming less marked in those countries. In India the problem of wage determination is all the more complicated owing to local diversities and even if there is a general minimum wage for the whole country below which no wages can go, it will have to be modified in upper direction for those centres where cost of living is high; and this will be the duty of the specialised wage board. There is another work for the wage board to which the Bombay Textile Labour Enquiry Committee has done well to draw attention. It is the question of fixing the differentials between various occupations and workers. In the words of the Committee, "Historically, a set of these differentials have already been evolved in the textile indus-

try and we found that to a large extent the differentials were similar from centre to centre. There are however to be found some remarkable differences. The differentials have obviously grown up in a haphazard fashion over a series of years. The attempts at standardisation of wages in various centres may lead to a careful examination of the differentials and their standardisation. In most cases they are due to extra strain, disagreeableness, skill or responsibility involved in the work. But while all of them might originally have had some justification they may not be found equally justifiable in the present circumstances. It will be for the trade board to go into this question and fix the differentials as far as practicable in a logical manner."

CHAPTER—VII

INDUSRIAL PEACE & EFFICIENCY

The subject of industrial peace occupies an important place in business studies, because of its direct bearing on efficiency. For, the maximum productivity can be secured only from a contented labour force. Harmony between labour and capital is essential not only from their respective standpoints, but also from broad national point of view, in so far as this maximises the volume of national dividend. The outbreak of industrial strife, on the other hand, means huge wastage of working hours, depreciation of plants and equipments for elemental reasons; heavy cost of maintenance per day; and consequent loss to national dividend. An idea of the loss of working days during industrial strife can be had from Table XXXIX. The remedy is to be found neither in coercion nor in state intervention, though the latter may reduce the intensity of the hostility, but in well-contented labour force. For, it is after all the product of day-to-day dealings between management and workers.

Strikes in India have often been ascribed to the communist propaganda and also to the influence of some political bodies. There is no doubt that these are to some extent responsible for strife; but everywhere the main reason is economic, as can be seen from Table XL which indicates that under stress, number of strifes increases much more than in other times. Thus prior to

1918-19 strike was an uncommon feature of industrial relations in this country. It made its first appearance in post-war years and once again with the coming of depression. The number of strikes again increased with the coming of the second great war. This time it was partly due to political and partly to economic factors. The largest number of strikes in India have taken place on questions of wages and bonuses, which include questions like low wages, wage cuts or fines, non-payment of bonuses which have been paid over a number of years and stopped all on a sudden, non-payment for extra-time worked, non-payment or disproportionately less payment for increased efficiency in rationalised occupations, etc. Other causes of dispute are connected with questions like employment and discharge of workers, leave and working hours, etc. These together constitute about 80 p.c. of the causes of strife in India. This is in common with the causes of industrial strife in other countries. As the Whitley Commission pointed out. "Although workers may have been influenced by persons with nationalist, communist or commercial ends to serve, we believe that there has rarely been a strike of any importance which has not been due, entirely or largely, to economic reasons." Even the recent researches in Western countries indicate that most industrial strifes are due to economic factors. Lee H. Hill in his *Pattern for Good Industrial Relations* has indicated the employee-wants, in order of importance, as follows: Security 0.751, fair adjustment of grievances 0.417, working conditions 0.300, wages 0.188, promotion 0.180, safety 0.167, supervision 0.147, recognition 0.145, benefit 0.125, job instruction 0.118, share in management and profits 0.111, information 0.104, amount of hours of work 0.103, job planning 0.094, self expression 0.085, efficient methods 0.083. This employee-want is immediately indicated in absenteeism. "A rising absenteeism is one reliable index of employee discontent." In our country the above-mentioned evils have become particularly prominent partly due to the absence of strong organisation of labour and partly due to the fact that there is little attempt on the part of management to get into touch with individual worker. Consequently, the labourers fall victim to intermediaries and are exploited by them. In those cases where "a regular system of personnel management is in operation, with a well-organised employment office, careful

attention to the allocation of each individual to the work best suited to his capacity and rigid control over dismissals by the manager himself," it has been found by experience that "the expenditure of time and money involved by such a system was amply compensated by the absence of stoppages and smoothness of operation which it procured."

Hence from the standpoint of efficiency the maintenance of industrial peace is essential. In this respect, prevention is better than cure. For, the straining of industrial relations itself affects efficiency of the operatives. Hence the need for industrial peace, for securing perpetual industrial harmony. Collective bargaining is a device for the same. It presupposes the organisation of employers and employees on equal footing and is concerned with the determination of working conditions in the widest sense. The role of the state is to lay down certain limits to the subject-matter of this discussion, e.g., standards of safety, methods of payment, conditions of work and of factory, workmen's compensation, etc., and also to provide extensive machinery for facilitating discussions on common matters and for amicable settlement on voluntary basis in case of differences. In this country the field is not sufficiently prepared in this respect. The state has laid down certain minimum conditions for the working of factories; but they are neither fully effective nor sufficiently comprehensive, since they do not include many things like health and unemployment insurance, methods of wage fixation and determination, etc. The employers are more or less organised; but they do not seem to realise the importance of collective bargaining. Some of them even go farther and refuse to recognise trade unions on one ground or another, the commonest ground being that they are run by "outsiders." Some outside element is unavoidable in the present stage of development of trade unionism; some outsiders again are bosses, and not leaders. But this is not true of all unions. In many cases, labour being heterogeneous in composition is most disorganised, as in the case of the jute industry and in some cases, as in Cawnpore in 1932, the Employers' Association not only rejected the recommendations of an Enquiry Committee appointed by the U. P. Government, but even went so far as to call the workers to seek redress of their grievances individually. This is no helpful ground for collective bargaining.

In the absence of a properly organised trade union and owing to the prevalence of labour unrest in the years following the first great war, a number of works committees were formed on the British model. A beginning was made by the Government of India who started joint committees in their presses in 1920. The example was picked up by the Tatas, and the Buckingham & Carnatic Mills. But they have not touched even a fringe of the problem, partly because of its very limited application but mainly because of the fact that while the employers have regarded them as substitutes for trade unions, the trade union leaders regarded them as rivals. The only serious attempt made in the line is at Ahmedabad where, since 1920, a permanent arbitration board is functioning and it has been considerably successful in maintaining industrial peace. But its success was mainly due to certain local conditions which are not available elsewhere, and hence the possibility of collective bargaining being developed elsewhere depends on the growth of sound trade union movement.

Industrial labour in India in itself is only a small proportion of total population being $2\frac{1}{2}$ million. Of this only 685299 were members of the trade unions upto 1943. The latest available figure shows an increase in the number of industrial labour, the number being 2334928.* In fact, with the exception of the unions of railway workers, workers in government printing presses and seamen and dockers, the Labour Textile Association of Ahmedabad and a few others, most others are strike unions and hence temporary in character. The migratory habits of the workers, heterogeneous composition of labour force in many places, their poverty and

* The distribution of this membership is as follows: A. I. T. U. C.—679143 members and 734 affiliated unions; I. N. T. U. C.—986983 members and 707 affiliated unions; and Hind Mazdoor Sabha 618802 members and 380 affiliated unions. A. I. T. U. C. has largest membership, 205817 from Bengal, 146665 from Madras with 231 unions and 128050 from Bombay with 78 unions. I. N. T. U. C., which was formed in 1946, ranks first as to membership but second as to number of affiliated unions. Its membership is more or less evenly distributed. Hind Mazdoor Sabha was started in December, 1948 and is led by the Socialists. The total number of registered unions in the Dominion is 2278. There are 458 registered unions with an aggregate membership of 50,000 outside the three all-India organisations. They represent small "politically unimportant" group of workers.

lack of education, and many other factors have made the labourers averse to union discipline and organisation. Many, again, are not, truly speaking, industrial workers and hence lack any interest. In some places, again, the half-organised and half-developed trade union movement is carried on communal lines, as in the jute mills of Bengal, or as in Delhi and Lucknow, and in others they are guided too much by revolutionary ideas, as in Bombay. The unsympathetic attitude of the employers is another obstacle. As was pointed out before the Bihar Labour Enquiry Committee that a large scale victimisation of labour is prevalent in Jamshedpur. At times rival unions have been encouraged and that too either on communal or provincial basis. In some mills welfare officer is utilised for both welfare work and for information work. In some cases, as in the jute mills of Bengal and the textile and other industries at Cawnpore, the policy of the employers has been to refuse recognition to the trade unions. These centres are also noted for long-drawn-out struggles between labour and management and for victimisation of many poor labourers. Even in Ahmedabad, where the greatest amount of harmony prevails, cases of victimisation have not been uncommon. As has been pointed out by the Bombay Textile Labour Enquiry Committee, no employer, with the exception of one or two, inspite of existing arrangements, has allowed a union to be formed without resistance, victimisation and strike and hence during the last two decades and a half, unionism had a chequered career even in that centre. The extent of victimisation in this centre can be gauged from the fact that during the decade 1926-7 and 1936-7, the Textile Labour Association had to pay Rs. 45,000 in the form of victimisation benefit.

Apart from the above hindrances, the internal organisation of union movement in India is weak owing to ideological conflict. In 1929, the communist group, which had been reigning in the Indian labour world, captured the A.I.T.U.C. Thereupon the moderate trade unionists formed the Indian Trades Union Federation, while the All India Railwaymen's Federation which was till then affiliated to the Trade Union Congress left that body in 1929 and remained outside till 1935. In 1931, the extreme left further broke away and formed the All-India Red Trade Union Congress. The labour organisation was once again united in 1938. All this was split from within. But recently a rival all-India

organisation, Indian National Trade Union Congress, has been formed. The objectives of this body are stereotyped, viz., the progressive elimination of social, political and economic exploitation and inequality, the profit-motive and the anti-social concentration of power in any form; to place industry under state ownership or control; to ensure full employment; to secure the increasing association of workers in the administration and control of industry; and the promotion of civic and political interests of workers. This new organisation has been sponsored by Congressmen whose charge against the old organisation is that the latter is dominated by the communists. But this sort of rival organisation is likely to hamper the solidarity of labour at the present stage; for, they will simply be bewildered and misguided. It would have been better to struggle up from within rather than strike from without. There is yet a lot of organisation to be effected and an effort from within would have strengthened the labour front. As it is developing at present, the growth of three all-India bodies, A. I. T. U. C., I. N. T. U. C. and Hind Mazdoor Sabha, was drag unionism in the political area.

The first legal recognition to trade unionism in India was given in 1926; but the provisions apply only in those cases where unions seek registration under it. Even among the registered unions which numbered 693 in 1943 with a total membership of 685299, many cannot be regarded as sufficiently strong either in membership or organisation. The Bombay Industrial Disputes Act of 1938 has made victimisation a punishable offence. An all-India legislation on this line is essential for the growth of trade unionism. A system of compulsory registration of trade unions should be adopted which would on the one hand make the formation of mere strike unions impossible and on the other the registered bodies will command greater recognition from the employers.

A few words need be said about the trade union policy in a country like India. At present ideological conflict and scramble for power have become the guiding factors, and hence unionism has fallen in stagnation. The proper aim of trade union policy in a country like India should be the organisation of the workers and increased production. As already seen, the major portion of the labour force is still indifferent. This cannot add to the growth of unionism. Increased production at any cost is essential.

True, there is considerable inequality in the distribution of income which cannot be supported; but a greater evil for us to-day is inadequate production. If existing national income of India be equitably distributed, it will not come much per head. This will simply mean the distribution of poverty. The real and lasting remedy for the labourers' poverty is planned policy of economic expansion on all fronts, which in its turn depends on the maintenance of industrial peace. But then charity begins at home. It is too much to expect a half-fed labourer to go contented and help in the production drive when he finds his share being misappropriated elsewhere. Hence it should be supported by wages according to work, supplemented by some bonus or profit-sharing scheme. The matter is discussed elsewhere.

When collective bargaining, as enumerated above fails, the only possibility is to prevent disputes when they are going to break out or to settle them when they have already broken out. Voluntary conciliation has in general been the British practice while some of the British Dominions, Germany and the U.S.A., and some of the smaller states of Europe have found it necessary to enact various kinds of laws making arbitration or conciliation compulsory. Some countries, again, e.g., Belgium, France, Italy, Spain & Netherlands have adopted voluntary principle for industries in general but in case of public utility services have experimented with anti-strike legislation. Experience, however, shows that compulsion in these matters is not very successful. As the Balfour Committee observed in their *Report on Industrial Relations*, "the only instrument by which the Courts can operate is a series of orders or decrees each of which is primarily concerned with relations of employers and employed in some particular industry and dispute, whereas in matters affecting the permanent economic welfare of the nation, regard must be had to many considerations besides the harmonising at a given moment of the interests of a particular set of employers and employed." Under Indian conditions, compulsory arbitration has little chance of success. A committee appointed in Bengal as early as 1921 pointed out that all schemes having any element of compulsion enforceable by law would not be applicable as a solution of the existing unrest and efforts should be made to settle disputes by agreement through joint works committees. This proposal was in line with

that made by the Whitley Commission for England. Such industrial councils in England have been instrumental in securing the ventilation of grievances in an early stage before the relations of both parties are strained and have thus reduced the area of dispute.

The earliest effort made by the Government of India for providing a machinery for the settlement of disputes was in 1860 when the Employers and Workmen's (Disputes) Act was passed. It was applicable only to the construction of railways, canals and other public works and provided for the summary disposal of disputes by magistrates. The law has become obsolete long ago; but even when it worked it was not able to maintain neutrality towards labour and evidences are not lacking that the police have favoured employers either by recruiting "black-leg" labour or by prohibiting contact between labourers and their leaders with the help of Sec. 144 of the Cr. P. C. The Indian Trade Disputes Act of 1929 is the first important piece of legislation in this respect and it strictly observes the principles underlying British legislation. It provides for the setting up of ad hoc Court of Enquiry or Board of Conciliation in case of trouble and it is the duty of this body to attempt to effect "a fair and amicable settlement." In case of failure its function is over as soon as it reports the whole matter to the appointing authority. It is however regrettable that of this limited machinery, inadequate use has been made and only a few cases have been referred to the conciliation board or court of enquiry. The machinery in itself is also defective in so far as the conciliation board can only be formed by government when the strike is already in progress and when both parties or either of them show a disposition to a settlement. That means not only the straining of industrial relations but also a huge loss of wealth. In 1945, the Government of India has established machinery for dealing with industrial relations in undertakings and industries falling within their sphere, major ports, federal railways, mines and oilfields. It consists of Chief Labour Commissioner, three Regional Commissioners, and a Deputy Labour Commissioner and its function would consist of looking after industrial relations and conciliation, labour welfare, operation of labour laws and maintenance of information regarding wage rates and conditions of work. This however is an entirely official machinery and is not at all akin to works committees.

Bombay is the only province which has provided separate machinery for settling industrial disputes under the Bombay Trade Disputes Conciliation Act (1934) and the Bombay Industrial Disputes Act (1938). The former provides for the creation of a permanent conciliation board with the Commissioner of Labour as ex-officio chief conciliator and for a Labour Officer to watch the interest of workmen with a view to promote harmonious relations between employers and labourers and to take steps to represent the latter's grievances to the employers for the purpose of redress. The Bombay Millowner's Association has appointed its own Labour Officer who together with the Labour Officer appointed by the Government has been able to secure better industrial relations in the textile industry to which the Act applied in the first instance. The latter Act is more enlightened and advanced than even the All-India Trade Disputes Amendment Act of 1938. Under the Amended Act, provincial governments, in respect of undertakings carried on within the provinces, may appoint conciliation officers charged with the duty of mediating in or promoting the settlement of trade disputes. But this Act is equally defective as the original one in so far as conciliation is to begin only after the strike has started and in so far as it cannot prevent employers from making changes in matters of wages or conditions of employment. The object of the Bombay Act is that the machinery of conciliation and arbitration must be fully exhausted before a strike or lockout can take place. The Act makes distinction between three types of unions—representative, registered and qualified. A trade union will be registered if it has a membership of 5 p.c. of the total number of workers and is recognised by employers, or if it has a 25 p.c. of membership of the total number of workers, irrespective of the recognition from the employer. A union with 5 p.c. membership and without recognition from employers is qualified union. A representative union is that registered union which has a membership of 25 p.c. of the workers for a continuous period of six months. The Act provides for an elaborate conciliation machinery and for a permanent industrial court. The acceptance of the award is not compulsory; but the submission of all cases to the machinery provided, before the dispute breaks out, is compulsory. Besides, provision has been made that any change in wages or hours of work or in any other condition of employment,

if desired either by employer or by worker, must be placed before prescribed authorities and no change can be brought in until the machinery provided for by the Act has been fully exhausted. The labourers have, however, not been fully satisfied. It is held that the classification of trade unions into three categories and the imposition of "the condition of 25 p.c. membership for a representative union is very difficult to fulfil and its imposition may be regarded as a hindrance in the way of encouraging the growth of trade unions." Besides, it is held by labour that the Act has deprived them of an effective instrument of warfare without any compensatory advantage. But these are defects in certain provisions; on the whole, the Act must be regarded as much more effective and comprehensive than any previous legislation, and some of its provisions, e.g., those relating to the establishment of a permanent industrial court, may conveniently be incorporated by other provinces in their own conciliation schemes. One improvement may however be suggested in Bombay legislation, viz., the speeding up of the machinery provided for the settlement of disputes. The present machinery is too dilatory. The machinery of special labour courts adopted by some western countries may be set as the type of machinery required in this country as well. The cases before these courts involve less time and less expenses, and everywhere the trend has been for the extension of their functions rather than their contraction.

Recently, the Government of India* and also Bombay Government have enacted two laws, viz., Industrial Disputes Act, 1947

* Other measures taken by the Government for securing industrial peace may be noted in brief. For the purpose the following laws have been passed: Indian Trade Unions (Amendment) Act of 1947 providing for compulsory recognition of trade unions and setting up of labour courts to adjudicate on claims for recognition; Factories Act providing for safety, health and welfare of workers; Employees' State Insurance Act providing for a state insurance scheme for industrial workers; Dock Workers' (Regulation of Employment) Act providing for the decasualisation of dock labour, the Minimum Wages Act and the Coal Mines Provident Fund and Bonus Schemes Act for coal miners. Two Standing Industrial Tribunals have so far been set up by the Central Government one at Dhanbad to deal with disputes relating to mines and the other at Calcutta to deal with other disputes in Central sphere. Consequent upon this wages have been raised as a result of the Bombay Textile Award (Supplementary) in respect of dearness allowance and the Ahmedabad and Indore Textile Awards.

and Industrial Relations Act, 1947, respectively, both providing for the establishment of joint council of workers' and employers' representatives in large enterprises. It would have been helpful if these laws had incorporated provisions to the effect that all workers who are subject to arbitration award or industrial agreement should be members of trade union and that the employers should engage the members of the trade union only. This would help the growth of trade unionism and smoothen the way for joint industrial machinery for the maintenance of industrial peace.

The above Acts provide for an external machinery; but a more effective one is the internal machinery, such as works committees, regarding which reference has already been made. Naturally, to be effective, these committees should be joint committees of employers and employees. In our country in the limited sphere where such committees are working, they have attained very negligible success, may be due to the domination of employers and may be due to their restricted functions. The first of these committees were established in Cawnpore by C. T. Allan & Co. Similar committees exist in the Tata Iron & Steel Workshop, with one coordinating committee, in the Tata Mills, Bombay and in

All provincial Governments have utilised provisions of the Industrial Disputes Act to set up works committees with the exception of C. P. and Berar, U. P., and Bombay who have got their own Act relating to industrial dispute. The Government of Bombay has directed the setting up of joint committees, analogous to works committees, under its Industrial Relations Act, 1946 and has also taken action under the Central legislation and has asked all industrial undertakings employing 100 workmen or more to set up works committees. The U. P. Government have issued an order under their Industrial Disputes Act, 1947, requiring every factory employing 200 or more persons to constitute works committees and 150 committees have already been set up. In undertakings in Central sphere, the Chief Labour Commissioner has been delegated powers to require the constitution of works committees in industrial establishments employing 100 workmen or more in any mine or oilfield. Orders have already been issued requiring Port Trusts of Bombay and Madras and Port Commissioners of Calcutta to establish works committees. Similar orders have been issued in regard to individual establishments employing 100 or more workmen in an industry carried on only, or under the authority of, Central Government, other than a Federal Railway, mine, coalfield or major port.

Currimbhoy Ebrahim & Co. Ltd. In most of the Railways, Staff Councils have been organised which partly consist of the representatives of workers who are entrusted with the work of bringing before the management any matter concerning working conditions in different departments. In order that these may be effective, their powers should be widened so as to include matters like wages, hours of work, working conditions in the factories, etc. Most of these are mere supervisory bodies, supervising the operation of welfare schemes, and sometimes, as in the case of the railways, bringing the grievances of the workers to the notice of the management. With widened powers they will prove more effective in improving industrial relations in India.

The efficacy of minimum living wages for securing a more contented labour force may also be considered. We have already seen that the majority of disputes take place on questions of wages which fall below fair living wage standards. In our country, not only is the existing wage level extremely low; there is also no machinery for securing automatic adjustment of wages with fluctuations in price level. The dearness allowances, etc., granted by the employers are as much arbitrary as they have nothing to do with the proportion of changes in the value of money. A flexible machinery for wage adjustment will remove a fruitful cause of dispute. It should however be seen that the minimum so fixed does not become the maximum in the hands of employers. For, that will cause injustice to the better type of workers and tell adversely on their efficiency and initiative.

Two more devices have been utilised in industrial countries with result favourable to the maintenance of good industrial relations. These are profit-sharing and labour copartnership. These have given the employees a definite interest and share in business. Profit-sharing implies an agreement freely entered into by which the employee received a share, fixed in advance, of the profits. Thus contribution by the employers to the provident fund or bonuses on output, premium proportionate to savings effected in production, commission on sales, etc., do not come under the profit-sharing scheme. Besides, the share of the employee must be predetermined, and not arbitrarily fixed by the employer. The scheme should include a major portion of the ordinary em-

ployees. Actually, profit-sharing schemes have assumed so many diverse forms as can be seen from the following:—

1. Schemes consisting in the allocation to the employees of a bonus dependent on profits or dividends, the bonus being:

- (a) paid in cash or credited to a savings account from which sums may be withdrawn at short notice;
- (b) retained in a provident, superannuation, etc., fund;
- (c) paid in, or retained for, investment in shares or other capital of the undertaking.
- (d) retained for investment for a prescribed period, then part so retained and part paid in other ways; and
- (e) combination of above and other methods of payment.

2. Deposit Schemes, i.e., schemes under which interest, varying with the profits, is allowed on deposits made by employees.

3. Schemes which admit employees to participation in the profits by virtue of the issue to them of share capital, either free or on specially favourable terms as to price or dividend.

The monetary aspect of these schemes is not something considerable. "The average rate of bonus paid in all the schemes for which particulars can be given varies within very narrow limits from year to year and the average for the whole period 1901-24 inclusive was equivalent to an addition of 5.2 p.c. to the earnings of those participating." Its importance lies in other respects. First, it is a device for stimulating effort on the part of the employees and maintaining it over years. Some of the employers have found annual profit-sharing schemes inadequate and have adopted six-monthly, quarterly or even monthly schemes. And secondly, its importance is "to be found in its position as a part of a whole system of arrangements for interesting the employees, and in giving an opportunity for the presentation to the employees at frequent intervals of detailed statements as to the progress of the business and to its financial position." In this view, profit-sharing is "rather a mode of creating harmony throughout the works than a direct stimulus to effort."

It seems that this aspect has been missed by our industrialists as is apparent from the reaction of some of them. Besides, as shown above a profit-sharing scheme need not mean an addition in cash to the wages paid to labour, in which case only it becomes uncertain. But if it is credited to the provident fund or issued

in the form of share to the labour, it will create an atmosphere favourable to psychology of labour. Of course, as L. N. Birla has pointed out that there are even difficulties in making such a scheme effective and at times it becomes difficult to find out any definite relation between efficiency and standard of remuneration. Thus if an industry be highly mechanised and the other less, the former will distribute a share in profit among the limited number of labourers while the latter will have to do so over a vast number, the share per head diminishing. No body denies that profit is an uncertain factor, a windfall, so to say. But we cannot view profit-sharing scheme as being helpful in increasing the earnings of labour. Its monetary aspect naturally dwindles in importance and wherever it has been adopted and put into effect, it has been an instrument for creating a psychologically favourable atmosphere rather than increasing the money-income of the labourers permanently. For the latter purpose, however it is utterly unsuited in view of its uncertain character.

In this country, apart from bonuses paid to workers during periods of specially high profits, nothing in the nature of profit-sharing is to be found. In view of the unduly-low wage-rates prevailing, a very small addition in earnings in the form of profit-sharing, cannot be expected to bring much of mental satisfaction, unless the minimum wage-level is sufficiently high to ensure a fair living wage standard. Sometime back a profit-sharing bonus has been introduced in the Tata Company, the results of which may be awaited with eagerness. But if we are to judge from the bonus schemes already prevalent in the Tata Company, it must be said that they have not been able to secure the satisfaction of workers, particularly because of the fact that workers in lower income groups for whom such earnings are necessary are not those who have benefited most from these schemes. Even the recent scheme "is generally applicable, and adds to the total annual earnings of only the top-most workers." Strictly speaking, these are not profit-sharing schemes. Any profit-sharing scheme which discriminates against the lower-paid workers or which has as its object the disruption of labour organisation cannot succeed. In India two or three schemes that were introduced in the years following the first great war suffered from this defect. One such scheme definitely stated that any one who takes part in strike against

management or has disobeyed the orders of his superior will forfeit his right to share in profits. Again, the management reserves itself the right of refusing to any worker, without assigning any reason, the share in the profits. This type of profit-sharing schemes which are not based on the workers' right to receive, or even joint consultation, but on the employer's charitable mood are too narrow to be regarded as profit-sharing in truest sense of the term and do not even deserve to be successful.

Labour co-partnership scheme is only an extension of profit-sharing scheme, in so far as, in addition to enabling the employees to share in the profits of a concern, it enables them to acquire some share in the capital and control of business with which they are associated, either by virtue of their shareholdings or by the formation of a co-partnership committee of workers, having a voice in internal management. In this country where even profit-sharing schemes have not been introduced, labour co-partnership is a far-off dream. Some higher-paid employees may be found to invest a part of their income in some shares, not necessarily those of their own concern, and by virtue of their shareholding get the rights and obligations of ordinary shareholders. But truly speaking, these are not labour co-partnerships.

Wherever these schemes have been introduced, the organised labour has mostly opposed them, mainly because they have tried to disrupt the solidarity of labour. Hence in many places where these schemes are in operation, they are due to the initiative of the employers, and have been introduced at times in the face of indifference or even active resistance on the part of trade unions. In order that these schemes become successful in manufacturing good industrial relations even the representatives of labour must be consulted, and a joint machinery would be all the more helpful.

CHAPTER— VIII

WELFARE AND EFFICIENCY

We have seen in the previous chapter that the main reason for industrial strife is to be found in economic factors. Much of this friction is due to this feeling on the part of labour that he is not being given the same facilities and ease as are his due. Some of these demands, e.g., fixation of minimum wages, have already been noted. There remain a few others which though previously ignored have come to assume great importance in recent years and are collectively known as welfare schemes. The term has a broad as well as a narrow connotation. In broad sense it "comprises all matters affecting the health, safety, comfort and general welfare of the workman, and includes provision for education, recreation, thrift schemes, convalescent homes, etc....." In narrow sense it implies "the arrangements made to secure the general health and comfort of the workman as distinct from the precautions adopted against the risk of injuries to health due to the workman's occupation." In brief, the industrial welfare idea implies a change, an improvement in the relation between the giver and taker of labour, a relation not merely dependent on money wages but also on the betterment of the conditions of work and of living of the workers.

Industrial welfare has an important bearing on the efficiency of workers. It is recognised that a contented labour force is most conducive to highest productivity in business. Concrete studies made in Canada support this assertion. They show that welfare work is directly connected with an increase in efficiency, goodwill and contentment, with consequent increase in labour stability and reduction of time cost. We have already seen how an intermittent labour supply leads to inefficiency; for, such labour force cannot adjust itself to the sort of life to which they are called upon to adjust. The dreadful life of the factory and of the bustees does not attract the best elements; only the needy are pushed to industrial towns by the pressure of economic forces. This in its turn leads to the evil of absenteeism, which is harmful from the standpoint of efficiency. For, absenteeism means more work for the super-

visors, more damage to product and machine, more wastage of raw materials, more accidents, more work in time-keeping and wage payment departments, more alterations in factory records. Since the work of the absentee operatives has to be performed by the regular ones, it leads to discontent among the conscientious workers, which is also uncongenial to efficiency. In our country, owing to lack of statistics, it is not possible to measure the extent of loss from absenteeism; on the basis of certain private enquiries this much can be said that it is considerable, and has increased during the past few years. According to the Labour Investigation Committee, in chemical industry in a firm absenteeism was as high as 22.1 p.c. In cement industry it ranged between 15 to 20 p.c., in glass industry between 14.5 p.c. to 21.32 p.c., in an engineering firm in Bihar 26.27 p.c. as against 13.89 p.c., in one woollen factory 17 p.c., and in some silk factories between 12 and 30 p.c. In textile industry the extent of absenteeism has increased as follows:—

Centre	1939	1946
Bombay	10.50	17.55
Ahmedabad	3.30	8.06
Sholapur	10.77	23.51
Cawnpore	4.33	7.16
C. P. & Berar	—	{ 20.4 (Day Shift) 32.8 (Night Shift)

Roughly it may be said, therefore, that absenteeism has doubled during the last ten years. This is not a hopeful feature for an infant productive system. In the first place, it is essential to keep complete record for each industry and for every unit of the extent of absenteeism, so that the management may realise how much loss they have to undergo on this account. This will induce them to improve factory and living conditions so as to create greater attractiveness for labour. The system of wage-payment should also be based on piece-wages so that even the operative may realise the extent of his loss due to absenteeism. It is true that so far as management is concerned, the extent of loss due to absenteeism can be reduced by the maintenance of double-trained labourers, by the introduction of Badli system, formulation of definite leave rules, etc.; but they will not

stop the loss in the national dividend. Besides, the employer will have to face certain inconveniences and losses because of the fact that he will have to maintain a bigger reserve of labour. If, however, we want a permanent reduction in absenteeism, the provision of better working and living conditions and the maintenance of a scientific and regular system of wage-payment are the only solutions. They will not only reduce absenteeism but also the migratory habits of the worker, the amount of labour turnover, and bring about a significant increase in the stability of labour forces. A study in Canada in 1925 shows that workers who had been continuously in service for more than 10 years constituted over 30 p.c. and those who had been in service for more than 3 years were about 56 p.c.

Two types of welfare works have been distinguished—statutory and voluntary, the former being compulsory and its application depending on the effectiveness of the law. Statutory welfare work is almost as old as the factory system and have covered a very wide range, such as, health, safety and comfort of workmen. The demarcation line between statutory and voluntary work is almost indistinct. But this much can be said that the law prescribes the minimum standard of working conditions beyond which voluntary efforts should proceed. But if this minimum becomes the maximum, the motive behind the legislation will be frustrated. For the objective of welfare schemes can only be attained with the co-operation of the employers. Howfar should legislation go in this respect is to be determined by the particular case in view.

In its inception, welfare work was associated with philanthropy and paternalism; but its real foundation should be economic. Hence in countries like the U.S.A. the very term 'welfare' has been discarded in favour of personnel work or personnel administration, with emphasis on the business aspect of welfare, and this has been linked up with scientific management. "As the movement developed, many of these functions, viz., lunch room organisation and management, nursing services, rest rooms, locker and wash rooms, recreational facilities, clubs, benefit societies, and similar other matters of socially beneficial nature, became so well-established as to become part of regular factory routine, and a definite tendency to ally personnel work very closely with the production end of business became apparent. The realisation of

the connection between personnel work and production soon led to the combination with the ordinary welfare work of such matters as the engagement and selection of work people, training, promotions, wages and production standards, working hours, job analysis rate setting, etc., and other factors affecting regularity of production." True, personnel administration involves some cost; but it is paying in the long run in the form of increased efficiency of the operatives. This cost in America and Canada is not paid out of employers' profits but constitutes a part in total cost and yet the total cost has not been excessive on the whole. This in itself is a sufficient proof of the fact that welfare schemes are financially a success. It may be difficult to measure the increase in productivity in statistical terms; but since they increase the stability of the labour force and raise the standard of efficiency of the individual worker, it may be said on the authority of some of the employers that "this work does promote the efficiency and productive capacity of the work people."

Welfare schemes in India are even today in early stages of development and even then there is no organised or comprehensive effort in that direction. The initiative has come only from a few enlightened employers and the efforts are isolated in nature. Many of these schemes, again, are essential for industrial purposes. Thus some of the housing schemes or schemes for imparting primary education to workers are essential in case of certain industries owing to their location at a distance from the sources of labour supply and owing to a lack of general education among the average employees. Even in industries providing seasonal occupations, e.g., sugar industry, continuity of employment is to be given to skilled and semi-skilled workers. Thus most welfare schemes in India aim at securing greater continuity of employment and raising the general standard of physical fitness and capacity for work of the employees. But so far as unskilled labourers are concerned,—and they constitute the vast majority of labouring population—the inadequacy of welfare schemes has made industrial career less attractive for them, and hence the employer is always faced with the problem of intermittent labour supply and a high rate of absenteeism throughout the year.

We have already made a distinction between statutory and voluntary welfare schemes. Among the former, mention may be

made of the various factory legislations since the 'eighties of the last century, Workmen's Compensation Act (1923), Indian Trade Disputes Act (1929) along with subsequent amendments, Maternity Benefit Acts passed by some provinces, Bombay Trade Disputes and Conciliation Act of 1934 and subsequent legislation (1938), Indian Dock Labourers' Act (1934), Payment of Wages Act (1936), and some other laws. But these are not enough and state action should follow in several other lines. First, there are certain defects in existing factory legislation which should be made more extensive so as to include many smaller units which have managed to keep themselves outside the purview of the Act. In some small concerns, the hours of work are unduly lengthy and working conditions also are far from satisfactory. Although an individual unit may employ only a limited number of persons, some of the smaller industries, when account is taken for the whole of India, engage people in thousands, who are working in most insanitary conditions and on most arbitrary terms. The exploitation of woman and child labour in some of these concerns needs the application of factory legislation to them. No less precarious is the condition in some of the mines and quarries which are worked under most primitive conditions even to this day. In some quarries, owing to the lack of inspection, even the provisions of the existing mining legislation cannot be made effective. Regarding hours of work, statistics of factories however shows that the actual number of working hours on average is much less than those prescribed in the Acts. This is a tendency for the better in view of Indian climate where long hours of work are sure to lead to great strain and hence a reduction in efficiency. The factory legislation of 1934 has also made certain provisions regarding working conditions in factories and has empowered local governments, under the rule making power given to them, to lay down standards for cleanliness, artificial humidification and cooling, lighting, over crowding, provision for drinking water, latrine and urinals, first-aid appliances, rest shelters, rooms for children and fencing of dangerous machinery at working time. But their enforcement has not been uniform owing to the duplication of authorities as between the Centre and the Provinces. Besides, there is no uniformity in factory legislation with the native states, with results adverse from locational standpoint.

Had the labourers been organised, even the existing legislation would have been more effective. It is true that a Trade Union Act was passed in 1926, but it did not make registration compulsory and till recently there was no provision for automatic "recognition." An attempt was made during the passage of the Bill through the Legislature to secure automatic recognition the moment a trade union was registered; but it failed. The Royal Commission on Labour had recommended recognition, but deprecated compulsory recognition because they had felt that such a course would not secure full and real recognition of a labour organisation. A recent amendment has introduced "recognition" of a trade union, under which a memorandum of agreement would be signed by the employer and the officers of the trade union and would remain in force till revoked by either party by application to the Registrar. But so long as it is in force, the relations of the trade union and the employer will be determined by the Agreement. Before recognition is accorded, the trade union must fulfill a few conditions: (a) that all its ordinary members are workmen employed in one and the same trade or industry; (b) that it is and has been, for at least twelve months preceding the date of the application for recognition, a registered trade union, and has complied with all the requirements of a registered trade union; (c) that its rules are so framed as not to exclude any member on communal or religious grounds; (d) that these rules lay down the procedure necessary for declaring a strike; (e) that the meeting of its executive is held at least once in every six months; (f) that it is a representative trade union; and (g) that it has applied for recognition to the employer at least three months before the date of the application to the Industrial Court for recognition and the employer has refused to do so. A recognised trade union will have the following rights: (1) its executive is entitled to negotiate with the employer in respect of all matters connected with the employment, its terms, and conditions of labour, for all or any of its members; (2) the employer must receive and send a reply to letters sent by the executive, and grant interviews to that body on all matters relating to the above. (3) in the event of a dispute, it is a matter for the Registrar to decide and that decision would be final; and (4) recognition once given is not final. The Registrar, or another trade union in the same trade or industry, or the em-

ployer, may apply in writing to the Industrial Court for withdrawing recognition on certain grounds.

In matters of social security, state action has not proceeded much as yet, although in other countries a considerable progress has been made. So far any programme of social insurance was left out on grounds financial, administrative and otherwise, such as, lack of statistical information, intermittent labour supply, lack of sufficiently qualified medical men, etc. But we have reached a stage where it is not fair to defer the adoption of these schemes. It is wellknown that so far as the Indian masses are concerned, the problems of poverty, disease, illiteracy, mortality, low expectation of life, underemployment and unemployment and many others are not less important. Our old social structure provided the necessary apparatus to deal with some of these problems; but the apparatus became blunt since the coming of the British rule. No doubt, the intensity of our problems makes social security expensive; yet inadequate finance should not be made plea for inaction. The labour laws in India are only "basic" in character and hence they do not deal with the questions of security in the widest sense. The only two lines in which state action has gone are workmen's compensation and maternity benefit.

The Workmen's Compensation Act was passed in 1923 and was subsequently revised on the recommendations of the Royal Commission on Labour. But the situation does not seem to have improved much. While the number of accidents has gone on increasing, the compensation given is extremely inadequate, as can be seen in Table XLI. Although the total amount of compensation given seems to be sufficient, yet compensation per head is very small. Compensations given in coal mines do not exceed 4 annas per ton. While accidents in mining industry are most frequent and the number of workers working in mines is about 4 lakhs, the extent of compensation provided is too small. In other fields where accidents are less frequent, the compensation given must be still smaller per unit of output. Even this inadequate compensation is not taken advantage of by many workers and their dependants. The Royal Commission reported twenty years back that "there are still cases where compensation for fatal accident should be and is not claimed...In many cases, they (i.e., the dependants) live hundreds of miles from the industrial areas, and

they communicate only at long intervals with the workmen whose dependants they are. On occasions they may be ignorant of his whereabouts and they may not hear of his death until some time has elapsed." And the position has not improved as yet. Enquiries in many cases in Bombay reveal that compensation is not enjoyed by many workers. Many again are not aware of the Act even and therefore accept as an act of compassion whatever is given to them. This situation is not likely to improve so long as the illiteracy of labour and their weak organisation continue. The question of cost of workmen's compensation has been the main concern with many employers, but the remedy lies in introducing accident insurance scheme like that of the Millowners' Mutual Insurance Association Ltd., Bengal, whose main object is the "mutual insurance of members against liability to pay compensation or damages to workmen employed by them or their dependants for injuries or accidents, fatal or otherwise, arising out of, or in the course of, employment." Nowadays facilities for accident insurance are offered by some leading insurance companies, of which mention may be made of the Claims Bureau in Calcutta and Madras who represent many of the leading insurance companies working in this country and deal with a large number of claims. Similar arrangements may be extended to all the centres.

Another line of action has been the maternity benefit legislation in some provinces, viz., Bombay (1929), C. P. (1930), Madras (1934), U. P. (1938), Bengal and Sind (1939), Punjab (1943) and Assam (1944), and also in Delhi, Ajmer-Merwara and some of the Indian States. The substance of Provincial legislation is given in Table XLII. It is clear that maternity benefit legislation is not uniform, which, possibly, is due to different standards of living in different provinces. Besides, the benefit is given only in money and not in kind, e.g., medical benefit. But the greatest defect lies in the administration of the laws which is not very successful and cases of evasion are frequent. There have been cases in which women operatives are dismissed at the first sign of pregnancy and in many cases they do not receive benefits when there is a break on the qualifying period as a result of strikes or absences from work for other reasons. The administration of legislation should be made more effective.

Another important line of social security is health insurance and it is essential in India in view of high mortality of our population from preventible diseases. It should be remembered that the individual is a product of his environment and his inefficiency is therefore an acquired one, and not a congenital weakness, being due to low income and absence of proper medical facilities, combined with bad working and living conditions. It was found in an enquiry made by the Labour Office of the Government of Bombay that about 22 p.c. of the sick received no medical treatment while 40 p.c. had resort to quacks and various country-medicines. By common consent, the incidence of sickness is substantially higher than in western countries; the medical facilities much less adequate and the income is too low to enable the workers to place themselves under medical care. It is true that some employers grant sick leave with full pay, and some, particularly in the collieries, pay their workers a subsistence allowance during illness; but these are not parts of any consistent sickness benefit scheme. Only very few employers have adopted such schemes. Thus in the Bata Shoe Company, the contribution of members to the scheme is graded according to their salary, the company also making a similar contribution. In the Serampur Colliery, the miners and leaders are called upon to pay 6 pies in the rupee of their earnings and out of this contribution a fund has been built up whose benefits are given for sickness, birth, death, physical disability, old age and also to orphans and widows who cannot work. In another colliery contributions are made not only by the miners but also by the raising contractors and all fines and unpaid wages are credited to this fund out of which benefit is given for sickness, maternity benefit, orphanage, widowhood and oldage. Similar schemes are also to be found in the Indian Copper Corporation of Ghatsila, East India Tramways Company of Karachi, Delhi Cloth Mills, the Lyallpur Cotton Mills and the Empress Mills at Nagpur.

The Adarkar Scheme of health insurance as published some time back covers only three groups of industries, viz., textiles, engineering and mineral and metals. Even in these, many units having less than 500 workers are excluded nor does it cover cases of prolonged illness, destitution of a lasting nature and of persons above 60. Maternity benefit is not an integral part of the scheme

while the incorporation of benefits during rehabilitation period into the scheme is considered impracticable at present. With so many limitations it covers only 12 lakhs of people. A qualifying period of 6 months is fixed for the receipt of cash benefit and its amount varies according to the particular categories of workers, vid., cash benefits for 90 days for permanent workers, 45 days for temporary hands, and none to casual workers or to those sick workers who prefer to leave their place of work. The scheme is based on joint contribution by employers and workers, supported by the state and it bases medical benefit on 14.6 days of sickness rate per year per worker. The average medical benefit per worker would be Re 1-12, i.e., 42.5 p.c. of total contribution, and cash benefits would amount to 45 p.c. of total contribution, the remainder 12.5 p.c. being spent for administration. The scheme was defective in view of its limited scope and applicability and hence was revised and its coverage has been extended to all perennial factories and to health insurance, maternity benefit and employment injury. In order to interest the provincial governments in the operation of the scheme, the revised schemes proposed to utilise provincial medical services for purposes of health insurance scheme.

On the basis of the revised scheme, a law has been passed in December, 1947, envisaging compulsory state insurance applicable throughout the country and providing for certain benefits in the event of sickness, maternity and employment injury to workmen employed in perennial factories. The scheme however does not apply to the largest number of workers, viz., agricultural labourers, to seasonal factories and also to employees in banks, insurance companies, commercial offices, transport services and municipal workers of all kinds, mines and workshops, nor does it provide any old age pension or unemployment insurance. The administration is entrusted to a Statutory Corporation to be managed by a Central Board. A Standing Committee will look after its day-to-day administration. A Medical Benefits Council is set up to advise on the administration of medical benefit, certification of sickness, etc. A Workmen's State Insurance Fund is also formed for financing the scheme. Contributions will have to be made by the employer and by workman at specified rates. The benefits to be granted include:—

- (a) Sickness Benefit or periodical payments while rendered incapable of working by illness;
- (b) Maternity Benefit, payable in case of confinement of a woman worker;
- (c) Disablement Benefit or regular payments during continuance of incapacity for work because of employment injury; and
- (d) Medical Benefit or periodical payments to the dependents of an insured person who dies by reason of employment injury.

Another aspect to which the state should give consideration is industrial health research, as that carried on by the Industrial Health Research Board in England. Owing to different circumstances, it is not possible to apply the findings of this Board in all cases in our country. Thus, the hours of work that constitute an economic limit in the west do not do so in our country owing to climatic differences. This economic limit is to be studied with reference to the strain in each industry and its geographical location. Similar researches are to be made with regard to temperature and other factors in their effect on output, on the relation between fatigue and output, and various other problems. Most of these problems are local in character and have to be studied on the spot. The results of these investigations when applied will minimise physical and mental fatigue and discomfort, or which comes to same thing, maximise output attainable at the cost of a given amount of fatigue and discomfort. One is reminded of the remark made by the Balfour Committee: "Manifestly, any results obtainable along these lines may have important bearings on industrial efficiency and relationships, and such researches, if carefully, and systematically pursued, should furnish a basis for the various types of practical measures."

State action in solving the problem of unemployment is no less important from the standpoint of maintaining the standard of living and of efficiency of the workers. The problem is as diverse as it is complex. It is difficult to give figures of unemployed people in agriculture, industry and commerce, for we do not have any system of the registration of the unemployed owing to the absence of unemployment insurance and the number of those registered in the employment exchanges is microscopic. The

inadequate development of modern industries and the decay of cottage industries have intensified the problem. Besides, agriculture being a seasonal occupation, many people are half employed and the number of agricultural proletariat depending on uncertain offers of work is, according to some gresswork, 60 to 70 millions. Over and above these, there is an extensive middle-class unemployment owing to our defective educational system. The measurable loss due to unemployment, when relevant statistics are available, relates not only to the time lost, but the loss is much greater owing to the operation of various factors, such as, the loss of skill on the part of highly skilled workers, the deterioration of morale and possibly of the will to work, the inability of the industry to absorb young persons reaching employable age and prolonged unemployment. The total loss would thus be huge.

Unemployment for India is a curable disease, provided a dynamic economic programme is pursued. We have vast potentialities as already noted and their proper utilisation is by no means beyond human capacity. Apart from prolonged or quasi-permanent unemployment, there is also unemployment due to trade fluctuation or technological reasons. The advanced countries have devised a scheme of unemployment insurance which is absent in India. It has been argued that lack of sufficient data, unstable character of industrial labour in India and the large extent of labour turnover stand in the way of the introduction of any such scheme. But it is not realised that some of the difficulties are due to the absence of any such scheme. "There is indeed no practicable way of accumulating adequate actuarial experience without instituting such a system and as in every other form of insurance, the system can 'buy experience' as it goes on."

The case for forming labour or employment exchanges may be put here. Labour exchanges do not create employment; they simply pool together the available supply of labour and direct its distribution to various vacancies, thereby reducing aimless wandering. They will also remove the existing defects in the recruitment of labour. The employers also can make a better selection of labour. The exchanges also provide a source for the collection of unemployment statistics on which unemployment insurance may be built up. They will also eliminate the evils of bribery that exist at present owing to the prevalence of middlemen

in recruiting labourers. Thus the Ahmedabad Millowners' Association which had organised such an exchange as early as 1936 on an experimental basis, wrote in its labour exchange scheme as follows: "This evil (i.e., the evil of bribery) has been checked very successfully by the labour exchange. This could be seen from the fact that the average number of workers who applied for vacancies in the course of a single year was 60 lakhs. Similarly, employers have also discovered these exchange to be very useful and 59 lakh vacancies were notified through the exchange in 1930 representing a 40 p.c. increase over figures of the previous year. These statistics prove that the Labour Employment Exchange is popular both with the employers and the workers."

Apart from such minor experiments, no attempt was made to organise labour exchanges on a wide scale. During the second great war the government organised the National Service Labour Tribunals, which were intended gradually to assume the role of Employment Exchanges for technical personnel. The services of these Tribunals were continued after the war to help set up a voluntary system of employment exchanges for skilled and semi-skilled personnel. Such exchanges have been established at Calcutta, Bombay, Ahmedabad, Madras, Cawnpore, Nagpur, Delhi and Dhanbad. Their functions include: to obtain information from the employers, to furnish information to the public, to encourage employers to apply to the exchanges for any technical personnel they require. A Central Government Employment Exchange has been opened at Simla which issues general directions when required; coordinates the needs of the different provinces; and ensures that no province goes short of skilled or semi-skilled labour while there is a surplus in any other province. The employment exchanges are concerned only with technical personnel. Regional Labour Supply Committees have been formed for the recruitment of unskilled labour. It is essential that these exchanges should be popularised and the employers induced to make all appointments through them. This will solve the problems of labour recruitment as noted elsewhere. They should also develop the system of psychological tests so that employment may be provided according to the aptitude of the candidate and this will help to increase efficiency. To be successful, there must be close co-operation between these exchanges, the employers and the public.

Another development during the war has been the institution of the Coal Mines Labour Welfare Fund in 1944. The objects of the Fund include :

(1) Improvement in standard of living including housing and nutrition of the mine worker; of the social conditions among the miners; and the provision of recreation facilities for them.

(2) Provision of adequate transport facilities to bring the worker from his home to work and take him back at the end of the working day.

(3) Expansion of educational facilities.

(4) Improvement in water supply.

(5) Improvement in the conditions of public health and sanitation, prevention of disease, supply of medicines and drugs, and extension and betterment of existing medical facilities.

The Fund would be raised by the levy of an excise duty at a rate not exceeding 4 annas per ton of coal and coke despatched. The levy has been raised to 6 annas, with a maximum limit of 8 annas, by an Act of 1947. Out of the increase of 2 annas, 1 anna 4 pies per ton is being set apart to meet amortisation and maintenance charges for the housing of miners and the remaining 8 pies will be utilised to give grants-in-aid to the employers for providing dispensary services upto prescribed standard.

Leaving aside these statutory or semi-statutory welfare schemes, there are others which may be instituted by the industry, by trade union, or by joint machinery of both. In many of these cases, it has been impossible to obtain any quantitative measurement of the effect of organised welfare work on output; but there is no doubt that these schemes have not only improved the standard of ease and comfort to the workers and have therefore been of aid "in improving industrial relations and in increasing continuity of personnel and productive efficiency." Extensive welfare schemes constitute a wise investment and these, in their turn, bring in a profitable return in the form of greater efficiency.

To take up, first, the welfare scheme adopted by the employers, unlike in U. S. A., where paternalism is resented to, a certain amount of paternalism will not be unliked in India provided the labourers are convinced of the good intention of the employers. But wherever welfare schemes are adopted in India, they are not devoid of some ulterior motive, viz., squeezing as

much as possible out of labour. True, some such motive is always there behind any welfare scheme; but if it is dragged to the forefront it will simply increase the hostility of organised labour. Wherever the employers have provided for welfare schemes,—and only very few have provided—they include the following items: education, medical aid and maternity benefit, recreation, housing, cooperative societies, grain, cloth and tea shops and canteens, etc. How very inadequate the list is. The need for universal education is recognised by all for increasing the efficiency of labour. What to speak of technical training, even primary education has so far been neglected. Only a few mills in Bombay, and Ahmedabad, the Empress Mills at Nagpur, the Birla Jute Mills in Bengal, the Tata Iron & Steel Works, the Buckingham & Carnatic Mills, the British India Corporation, Cawnpore, and the E. I. Ry. Collieries at Giridih, of so many industrial concerns, have made any arrangement for imparting primary education to adult workers and only a few of the above have arrangements for technical training. What is more surprising is that the number of students is too small. Thus in nine night schools started by the Tata Iron & Steel Company, the number of students did not exceed 700. The arrangement for technical training is all the more inadequate, only a few concerns having such arrangement and some having apprenticeship classes and systematic courses for their workers in order to train them up in several lines. Untrained and inefficient labour is a liability for the whole society. In the words of the Federal Board of Vocational Education in the U. S. A., "Society as a whole has to pay the bill for labour inefficiency. Half-trained or poorly-trained workers in any field increase production costs, which in turn are passed on to the consumer." Technical training for a certain percentage of the workers in each industrial undertaking in Japan has been made compulsory with a view to give the operative "that deeper, almost psychological, knowledge which evades definition, but which is born of sharing the mentality and the life of the operative." The subject of vocational training is of recent interest in this country. It is realised to-day that the present day university education is unproductive and that education above the primary stage should be vocationalised. The expansion of vocational education in India is too inadequate, as can be seen in

Table XLIII. It will be seen that with such a vast population only one lakh of people get professional education and many of them again find it difficult to earn a livelihood.*

Inadequacy of medical aid has already been noted. In certain centres, e.g., Jamshedpur, where industry has developed at a distance from any existing medical institution, provision for medical aid has been a necessity for attracting labour. But in most cases the condition is far from encouraging. The author fully accepts the views of the Bombay Textile Labour Enquiry Committee from his own experience that some of the dispensaries consisted of a small cupboard placed on a verandah with a few

* Note: The second world war has however done something in changing the attitude of government towards technical training. The shortage of trained personnel was an abstacle in the way of pushing further the work of industrial production. So about the end of the year 1940 the Government of India instituted a technical training scheme which was designed to provide for the intensive training of a large number of skilled tradesmen required for technical branches of Defence Services and for Ordnance and Munitions factories. The scheme embraced special technical institutions expressly opened for the purpose and also a large number of existing factories and workshops. The total number of training centres in India on the 30th April 1945 was 163. The total number of trainees who had passed out of the various training centres upto 30th April, 1945 was 80352. The maximum training capacity in all centres was 30096 and those taking advantage of the scheme numbered 21266. A new Instrument Mechanics Training Centre was started at Hindupur near Bangalore with 275 seats in 1944 for training boys in the manufacture of precision tools which at one time was considered unsuitable for India. The scheme has demonstrated that "with intensive training, semi-skilled men can be trained for all industries, and that the standard of such men, after six to eight months' training, is at least upto, if not above, the standard reached under ordinary peacetime apprenticeship schemes of two to three years' duration." It was about the same time that the Bevin Scheme was introduced with a view to accelerate munitions production in India and at the same time, to "inculcate in the men an appreciation of British methods of industrial co-operation between employers and workers and the value of sound trade union principles." According to this scheme Indian workers were trained in the factories and work-shops in England. By the end of May 1945, 788 candidates were selected. The Sargent Scheme of Education intends to provide technical education side by side with practical training. Other items in the scheme include provision for schools for artisans and technical high schools, for a three-year diploma course for engineers and for the starting of polytechnics all over the country.

bottles of stock mixtures. Besides, whatever little is done is directed to the curative side and not the preventive side which would be helpful in maintaining good health and efficiency of the worker and also in stabilising the labour force. Even a small step in this direction would have an appreciable effect in increasing the wealth of India and should therefore be considered as a productive investment.

The housing of the labour force is equally horrible not only in congested industrial cities but also in smaller industrial centres, the notable exceptions to this being Jamshedpur, Cawnpore, Delhi and Madura. But elsewhere, not only from the standpoint of the number of rooms or tenements but also from that of sanitation and inspection, most of the labour colonies are visible hells. The situation in Bombay and Ahmedabad is shown in Table XLIV. The situation in other centres is equally deplorable. The *bustees*, or lines of pucca houses, with as much congestion and lack of sanitation as *bustees* in the jute mills, *cherries* in South Indian towns, *dhowrahs* in the coal-fields, *bustees* and barracks in plantations and leafy sheds in quarries are the sort of housing provided. It is not only the duty of the employers but also of the Improvement Trusts in big cities and municipalities in smaller towns, as also of the Administration, to see that a large part of the population is not allowed to have an animal-sort of existence. Insanitary housing is at the root of high infant mortality and poor physique of the survivors while insufficient housing is responsible for the absence of family life for many, and, therefore, for many a vices and consequent suffering from venereal diseases, which before 200 years were unknown in India. Today, India is possibly the leading-most country in the world in this respect. Improved housing is therefore the first step towards the establishment of family life for many, an upliftment in the standard of living and an increase in efficiency.

Any scheme of housing development should be based on scientific lines so that there may not be unnecessary duplication of expenditure. Thus, e.g., in Bombay, the Provincial Government embarked in 1920 on an ambitious scheme of providing about 50,000 tenements at a huge cost of about Rs. 5.5 crores. but the housing plan was defective and hence on the recommendations of the Industrial Housing Committee, the Government effected

structural improvements. This duplication of expenditure could be avoided by initial house-planning on scientific lines. The suggestion of the Royal Commission on Labour for tackling the problems of housing through workers' co-operative societies, though attractive, will not be able to solve the problem which is too vast and needs careful handling by all concerned.

As already said, employers' welfare schemes in India have been few and limited. In Bombay the mills managed by M/S Tata & Sons Ltd., and M/S Currimbhoy Ebrahim & Co. Ltd., are noted for their welfare schemes, within the limited range, not only in their own enterprises but also in co-operation with philanthropic bodies which they finance. The welfare activity includes medical aid, maternity benefit, *creches*, housing, organisation of schools, libraries and reading rooms and provision for recreation. Welfare activity in Sholapur include the appointment of a full-time labour welfare officer, maintaining schools for halftimers, hospital, *creches* and providing the benefit of loan funds, employees' stores, provident fund, gratuity fund and cheap and clean houses. Some mills in Bombay and Ahmedabad give gratuities or compassionate allowance to workers for long and faithful service. These schemes are however all discretionary, there being no fixed rules for them. The E. D. Sassoon Group of mills in Bombay have formulated a discretionary scheme for the payment of lumpsum gratuity to all workers who have put in 20 or more years' service. Provident fund schemes are however very few and their extension is rendered difficult owing to low wages paid to workers who cannot make any contribution regularly to such a fund. The welfare scheme by the Buckingham & Carnatic Mills of Madras started with educational and medical work and have been extended in other directions including a pension or gratuity scheme, and the establishment of a workingmen's institute, a library, a *creche* the establishment of a workingmen's institute, a library, a *creche* sickness insurance, maternity benefit, etc. The British India Corporation has not only provided for the usual form of welfare work done in India but also has introduced several new lines, e.g., better methods of employment and discharge, encouragement of better workmanship, introduction of labour-saving devices, care of women and new employees, prevention of accidents. The Corporation led the way in matters of housing scheme in Cawnpore

by establishing three workmen's settlements—MacRobertgunj for the employees of the Cawnpore Woollen Mills, Allengunj for the employees of the North Western Tannery and the Cooper-Allen Boot Factory and Kakomigunj for the employees of the Cawnpore Cotton Mills. Accommodation provided in these settlements is better, cheaper and more sanitary. M/S Begg Sutherland & Co. also finance welfare activities among the employees of the Cotton and Sugar Mills, Brushwares and Electric Supply Corporation under their charge. Of all welfare schemes, that which has attracted the greatest possible admiration is that by the Tata Iron & Steel Company at Jamshedpur. In part, this is due to the fact that a new industry developed in a region far interior from other industrial centres and hence some of the facilities of living have to be given to attract labour, both skilled and unskilled. But it must be admitted, as the Tariff Board pointed out, that "the company has recognised its obligations to labour and the economic advantages to be derived from a contented and healthy population... In the opinion of some, too much attention and too much expenditure have been devoted to labour welfare, but we are definitely of opinion that the attention and expenditure bestowed on these activities are well-repaid." It will be seen how very inadequate welfare activity in India is. Only a few concerns have provided for these and hence the total labour force deriving benefit from them is too small. Besides, most schemes are concerned with living conditions, and with the exception of one or two, have nothing to do with working conditions which are equally, and even more, essential for improving the efficiency of labour.

Welfare activity by trade unions is all the more negligible in India. Partly due to their recent origin and preoccupation with militant functions and partly owing to the lack of funds, it has not been possible for them to widen the range of their activity. Combination of politics in unionism has all the more distorted the situation. Only a few unions e.g., the Ahmedabad Textile Association and the Mazdur Sabha of Cawnpore have any welfare activity and it includes co-operative credit, maintenance of co-operative stores, provision of adult education, benefit funds, etc. Joint welfare schemes by employers and employees are practically unknown in our country. Only in Madras a joint welfare committee was started by the Buckingham & Carnatic Mills for estab-

lishing greater contact between management and workers and for discussing matters affecting the latter's interest. Such joint schemes have not developed owing to the non-recognition of many trade unions by the employers. The recent trade union legislation should prepare better grounds. There are a few philanthropic bodies, at times financed by rich people and employers, and engaging in welfare activities, such as, promotion of education and public health, sports and recreation, spread of co-operative movement, securing compensation for women, etc.

In any welfare scheme, it will have to be seen that that part of labour force which is least protected or organised, particularly women and children, does not go uncared for. While women and children are least organised, the adverse consequences of unfavourable working and living conditions are most on them. Something has been done in this respect by maternity benefit legislation, provision of *creches*, schools, etc. But these should be made compulsory for every factory and sufficiently qualified women inspectors should look into their particular needs. Besides, every factory should have trained labour welfare officers. Just as a huge staff is maintained to look after the efficiency of machinery and equipments and enormous expenses are incurred for their repairs and replacements, so also the human factor in production be placed in charge of some trained labour officer who is familiar with the basic needs of the workers, and hence can observe the influence of different working and living conditions on the health and efficiency of the workers. The present attitude of the employers in regarding labour as one belonging to the hostile group is narrow. For, apart from social loss consequent upon bad working and living conditions of the workers, worn-out labour involves loss to the employers even. It is true that in case of machines and tools, the employer has invested huge sums and it is not for the machine's sake but for the sake of his investment that he has to spend a further amount for their maintenance. But then the efficiency of the industry depends not merely on the efficiency of the machines but also on that of the operatives. Besides, to lose a trained labour means some loss even to the employer. Hence the investment made in the appointment of a well-trained labour officer will in the long run prove productive.

But so far there is no arrangement for the training of welfare

officers in our country. Welfare work in real sense is not the work of a medical or economics graduate. It requires a special training in industrial conditions, living conditions of workers, and industrial psychology, combined with some practical experience. The Government of Bombay maintains a Labour Welfare Department which is doing some work for the improvement of the conditions of labour. Similar departments should be started in other provinces. Besides, there should be a few institutes for producing labour officers and a beginning with such an institute may be made in Bombay where such a department already exists.

Finally, the expenditure incurred by employers in welfare schemes should be regarded as a part of cost, and not as a part of profit spent on charity. This would remove the paternalism of the employers. This new item in cost structure need not reduce competitive efficiency of the concern; for, as American experience shows, this cost item has, instead of increasing cost, reduced it owing to increased efficiency. The worker also will not have any inferiority complex in deriving benefit from the welfare schemes. Above all, as a cost item, expenditure on welfare schemes will no longer remain discretionary but obtain a permanent and stable basis. For the purpose, it will be advisable for each concern to maintain a separate Welfare Fund, on the lines of depreciation and replacement fund, and this would receive impetus if a certain sum allotted to the fund in the general budget is exempted from the tax. The solitary instance of such a fund in our country is the Employees Welfare Fund Trust provided by the Delhi Cloth Mills to which contributions are made out of profits. The Trust is administered by a Board of Trustees consisting of the representatives of the employers and the employees. It has four full-time officers, viz., welfare superintendent, secretary, welfare officer and lady welfare officer, and finances welfare activities, gives employers' contribution to the workmen's provident fund, gratuities to workers, old age pensions and provides cost of sickness insurance scheme and death benefits to the dependant survivors of deceased workers. The only improvement to above scheme that may be suggested is that the scheme, instead of being financed out of profits, should be financed from the general budget. The financing of any such scheme out of profits is defective not only because of the fact that it smells charity but also because profit is an uncertain

factor and hence expenditure on welfare schemes cannot obtain a permanent and solid footing, which is so very essential for ensuring a certain minimum working and living condition to the human factor.

CHAPTER—IX

SUNDRY FACTORS AFFECTING EFFICIENCY

SOME PROBLEMS OF INDUSTRIAL MARKETING:

In recent years, the organisation of marketing has come to occupy a very prominent place in all schemes of economic reconstruction. The problem is not only to find the market, wherever it may be, inside the country or outside, but also to see that the process of marketing does not involve too much expenditure which may threaten the competitive efficiency of the enterprise. Some aspects of the problem have been analysed in my *Indian Business*. Now we shall devote ourselves to the problem of industrial marketing.

At present India has a few industrial products to market in overseas countries. Whatever is produced is mostly consumed inside the country. I have discussed elsewhere how cement is marketed through a common sales organisation. So also in case of sugar, the Indian Sugar Syndicate operated successfully for disposing of surplus sugar produced in Bihar and U. P. In cotton textile industry, markets have expanded during the years of second great war even outside India. It is held by authorities on cotton textile industry that "the most significant factor today in the textile industry has been the economy of large scale merchandising and selling and that among the current proposals directed towards the recovery of the industry, one of the most widely accepted is that advocating the formation in the industry of a large number of integrated units in which the production and marketing of finished goods would be carried on under one management." Of course, as yet we have seller's market owing

to increased demand and curtailed production, both of cotton and piecegoods; but these conditions cannot last for all times. Hence it is essential that the existing market inside the country should be enlarged, export market properly explored and new demand for cotton products created by diversification of production. Besides, the industry should increase its competitive efficiency by the reduction of costs which have gone up and by improving the quality which has considerably deteriorated. In the internal market, cotton products are as yet marketed on individualistic basis. There being hardly any direct touch between the producer and the consumer, a long chain of middlemen has grown up. The Bombay Millowners' Association has made some attempt at building up contacts with up-country markets through trade correspondents and attempts have been made to maintain quality by the system of registration of trade numbers and names. Ahmedabad has also developed a system of trade numbers. Apart from these joint efforts, marketing of cotton goods in our country is based on individual efforts which is harmful. As the Bombay Textile Labour Enquiry Committee pointed out, "the evils of unregulated competition are so obvious that the need for some form of joint endeavour becomes imperative. The division of the market on the basis of the sources of supply, the allocation of production of specialised sorts to specific units or centres.....these matters must receive earnest attention if unbridled competition is to be checked."

The export of cotton goods has increased to a great extent during the past few years. But this was a temporary phase and if these markets are to be retained, positive steps have to be taken. The very first thing essential is that the producer must cater to the needs of foreign consumer. As yet Indian industry has very few personal contacts with foreign consumers nor is any effort made to make our trade connections permanent. The Indian products suffer from any lack of uniform standard in the quality of goods exported. The economic advantages of standardisation of products are so very great and yet their proper appreciation is so very negligible in our country! Standardisation implies two things, viz., first, the prescription by law, and supervision and enforcement by legally-constituted authorities, of elementary standard units of length, volume, weight, value and energy on which industrial and trade operations on a modern scale depend for their

security, together with such other standards of purity, strength or quality, as it may be considered necessary to enforce in order to protect the health, safety and well-being of the people; and second, the voluntary determination by industries, either individually or in agreement, of standards of size, shape, weight, strength or other qualities with a view to attaining some measure of uniformity in order to eliminate the waste caused by unnecessary multiplication of different patterns. We have already seen that some efforts at maintaining quality are being made in Bombay and Ahmedabad; but even these are not adopted by all units in these centres.

The lack of standardisation pervades the whole of our industrial structure and yet this is fundamental in marketing. It is well known how the lack of standardisation in our coal trade led to the loss of some of our outside markets in the years following the first great war. The continuous efforts of the Coal Grading Board resulted in an improved export position by 1938-39. So also in sugar, marketing was rendered difficult not only by the general inferiority of the product but also by the multiplicity of grades manufactured and lack of standardisation. A set of Indian standards based on colour and grain were prepared by the Government Technological Institute in consultation with merchants and manufacturers, making them suitable to Indian conditions; but these were adopted by very few mills, the old ones preferring to sell on the basis of their own marks and many new ones being unable to manufacture according to standards. Recently in cotton textile industry the Government has introduced some amount of standardisation from Dec. 1, 1947. The scheme will restrict production to such varieties as are in popular demand, reduce unnecessary widths and specify minimum breaking strength of yarn. The objective is to produce more and better cloth at the expense of fines varieties worn by a few people. In jute industry also, recently a beginning has been made at standardising jute goods and Govt. specifications have been approved. It is expected that these will be converted into official standards. The chief benefits likely to result from properly applied industrial standardisation were steady improvement in the quality of mill products and in commercial transactions and good relationship between manufacturer and consumer. The lack of standardisation in quality not only hampers foreign trade but also futures

trade in the product. Doubts have at times been expressed by producers as to whether the time is yet ripe for introducing definite standards of quality; but the difficulties are mostly exaggerated. So also in jute industry the number of types of jute cloth at present in production is large and in addition there is variation in the sizes of bags made up from the same cloth. Of course, the essential requirements of the buyer cannot be neglected; but yet there is considerable scope for the reduction in the number of types of cloth and bags at present made. This would make for efficiency and reduction of cost which are so very essential in marketing, particularly to foreign countries. This is specially so because the consumers of jute are, in view of rising costs of jute products, trying with substitutes and if the market be lost, our loss will be immense. In fact, a considerable population in Bengal depend on this. India is one of the principal producers of oil seeds and may also be a big supplier of oil and develop her own oil industry provided she introduces a certain measure of standardisation in her products. At present, because of the absence of any standardisation of oils, the importers abroad hesitate to import vegetable oils from India. In fact, this has held back the development of vegetable oil industry in this country. Hence it is essential to ensure definite standards to the importers in overseas markets. The fixing of grades and an analysis and classification of different oils produced is likely to be less reliable when done by private experts. Hence test houses should be started by government in different parts of the country for testing oil before export so that the importer may have no hesitation about its quality. Ungraded oil not only creates a bad reputation in foreign markets but even leads to a loss of market as soon as graded products are available in sufficient quantity.

Standardisation and grading of products are not only essential from the standpoint of trade but also from that of production. They lead to a reduction in types and sizes and thereby increase the productive capacity of existing plants by reducing the number of interruptions in manufacturing processes. This should not be taken as a case against diversification of production or for over-standardisation. While diversification is essential for meeting the varied tastes of the customers, certain degree of standardisation

or specialisation may be attained by the division of the market, both qualitatively and quantitatively, and entrusting production of different varieties to different units. Standardisation is also essential for the sake of continuity and steadiness of production, elimination of waste of materials, reduction in capital charges, e.g., in costs of plant, of maintenance, of stocks of raw materials, of inspection and supervision, etc. All these make standardisation an important goal to attain.

Marketing organisation is another important part of the marketing process. In the first volume, we have considered the various export agencies in manufactured goods. Special importance has been attached there to group-sale. We have already seen that individualistic tendency prevails in our marketing organisation, the notable exception being the Cement Marketing Board of India, and also the Indian Sugar Syndicate. This is not a healthy sign. Not only for internal marketing but also in export trade, it is essential that there should be some group action. This not only facilitates the elimination of waste due to unbridled competition but also enables the organisation to specialise in the matter, conduct market research and advise the industry as to the quality and quantity of product. The success of German Kartells is too wellknown. We also stand in need of such selling syndicates which while not interfering with the individual existence of the producing concern can at the same time secure the economies of large scale disposal.

Another important thing is market research which is practically absent in our country. The subject has been considered in my *Indian Business*. Here a few words may be said as to what countries like England are doing in this respect in order to revive their export markets. These arrangements should provide us an example on which we should proceed. Immediately after the war was over, there was a resumption of commercial market research on a scale which was comparable only with that in prewar years. The manufacturers are aware that the considerable volume of information about the special pattern which had been built up prior to 1939 is largely invalidated by changed conditions and hence are anxious to develop a long-term sales policy. For the purpose, towards the end of 1946, a Market Research Society of London has

been formed. At present market research in England is conducted by the following organisations:—

(a) Official and semi-official bodies, e.g., Social Survey attached to the Central Office of Information and the B. B. C.'s Listner Research Department.

(b) Market Research Department of nearly all large and medium-sized advertising agencies.

(c) Market Research Departments of one or two of the largest advertising agencies which have been formed as independent companies in order that they may be in a position to undertake work for outside firms and for competing advertising agencies too small to have their own research departments, e.g., Research Services Limited, the British Market Research Bureau.

(d) Independent organisations, e.g., Sales Research Services, British Institute of Public Opinion.

(e) A miscellaneous collection of smaller organisations.

Action in above lines should be taken in our country by the Government, various trade associations and, wherever possible, individual industrialists. It should be realised that inspite of the changes introduced in our export items during the last few years we are still now predominantly an exporter of rawmaterials, the notable exception to this being cotton and jute manufactures. But there are some products of our small scale industries for which there exists a good market in America. Among these mention may be made of hand-made carved and inlaid wood work, brass art ware, enamel ware, ivory carvings, cotton and silk embroidered goods, filagree works of all other kinds, coir and coir products, lac and lac products, etc. There exists a good and extensive market for cheap manufactured goods, previously supplied by Japan, in countries like Indonesia, Malaya, Siam and other South East countries, the Mid-Eastern countries including Egypt, South American countries like Brazil and Argentina, East African territories and Central Asian countries. Some strong marketing organisation is essential for obtaining a footing in these markets.

As is wellknown, our export trade is mostly in the hands of foreigners so far and Indian enterprise in this line is inadequate and unco-ordinated. It is hightime that the unorganised sections of India's export trade should be consolidated into one or more well-knit associations which could function as organised units in

trade with foreign countries. In foreign trade a multiplicity of small units is singularly unsuited in promoting exports nowadays. Among other things essential for the development of a market are the establishment of a trade research organisation on the lines of the British Export Trade Research Organisation, of a suitable trade organisation for the extension of financial and other facilities to the unorganised sector of our export trade.

SCIENTIFIC RESEARCH:

The operations of modern industry tend to be based on scientific knowledge and hence one essential factor in industrial efficiency is the continuous and systematic application of scientific methods both to the invention and improvement of particular methods and processes of production and to the enlargement of the boundaries of knowledge with regard to fundamental underlying principles. In technical language these two have been called "tactical" research and "strategical" research, the former having found importance in British industries and the latter in American and German industries. In either respect, we stand practically nowhere. At the time of the first great war, we had only the Geological Survey, the Botanical Survey, the Departments of Agriculture and Meteorology and the Forest Department. The Board of Scientific Advice which was formed by the Govt. of India in 1902 and coordinated the work of various official agencies was disbanded in 1924. There were only three research institutes, viz., Indian Institute of Science at Bangalore, the Forest Research Institute at Dehra Dun, and Agricultural Research Institute at Pusa. During the inter-war period, the following bodies were constituted for promoting research:

1. Imperial Council of Agricultural Research. (1930)—A result of the recommendation of the Royal Commission on Agriculture, its primary functions as envisaged were the promotion, guidance and coordination of agricultural and veterinary research to train up research workers who would act as a clearing house of information in regard to research and other agricultural and veterinary matters, to take over publication work from the Imperial Agricultural Department and to establish contact with agri-

cultural research in other parts of the British Empire and other countries.

2. Imperial Institute of Sugar Technology, Cawnpore (1936)—Formed under the recommendations of the Indian Sugar Committee of 1920, the Institute undertakes research work on:

(a) the problems of sugar technology in general and those of sugar factories in India in particular.

(b) utilisation of by-products of the industry.

(c) detailed testing of new varieties of cane under factory conditions; and

(d) general problems of sugar engineering and chemistry.

Besides, the Institute has tendered advice to the industrialists and the government with regard to the promotion of new factories, extension and alteration of existing factories, improvements in working of plants, improvement in manufacturing process, technical control of manufacturing operations, etc., etc. From 1st April, 1940, the Bureau of Sugar Standards has become an integral part of the Institute. The Bureau prepares and supplies the Indian Sugar Standards, publishes an annual review dealing with the quality of Indian sugars and giving comparative figures for competitive foreign sugars and maintains a museum of samples of sugars and sugar products.

3. Mineral Utilisation Branch of the Geological Survey of India undertakes exploratory work on mineral deposits with a view to ascertain whether the deposits are worth serious exploitation.

4. Indian Central Cotton Committee—Its activities now extend to all branches of cotton improvement and it spends a huge sum on agricultural and technological research and seed distribution and marketing schemes.

5. Indian Central Jute Committee—Its functions include agricultural, technological and economic research, improvement of crop-forecasting, production, testing and distribution of improved seeds, enquiries relating to banking and transport facilities and transport routes, improvement of marketing and collection and distribution of information regarding jute. Its research work includes technological research which includes spinning of samples of fibre obtained in agricultural experiments, and also investigation in the relations that may exist between spinning quality and

measurable chemical or physical characters of the fibre. Problems dealt with which are of direct importance to jute industry include the effect of twist on yarn strength, improvement of jute bags for storing commodities such as sugar and cement in damp atmosphere and spinning of flax and other fibres on jute machinery, either alone or blended with jute. The Committee also devotes its attention to the problem of finding new and extended uses for jute, to fibres which are or may become competitors for jute with the object of assessing the danger from competition and of determining the suitability of fibres for spinning on jute machinery, and to the day-to-day problems that may be submitted by mills or other bodies.

6. Indian Lac Cess Committee.

7. Research in Paper Industry at the Paper Pulp Section of the Forest Research Institute, Dehra Dun.

8. Board of Scientific and Industrial Research, formed in 1940 for meeting the needs of war. It includes the following in its organisation, viz., a Council of Scientific and Industrial Research, an Industrial Research Utilisation Committee, and a Committee for the publication of a Dictionary of Raw Materials. Its research works which are of practical value include work on coal tar and its products, synthetics, drugs, preparation of vitamins, paints and varnishes, plastics, vegetable dyes, de-colouring vegetable oil and mineral oils, the design and construction of electro-acoustical and high frequency apparatus, X-Ray transformers and the extraction of sulphur from sulphur-bearing rocks in Baluchistan. With the assistance of the Board the Institute at Dehra Dun has prepared packing cases for army boots, timber for aircraft construction and machine-nailing tests, for ammunition boxes and shuttles; and the Government Central Weaving Institute at Benares has designed and constructed an automatic tape-loom, a twisting machine and a multiple treadle winder. This is a good beginning no doubt. But as yet the Board has not sufficient laboratories, apparatus and trained staff for carrying on research work on an extensive scale. The Board has under contemplation the establishment of a National Chemical Laboratory, a National Metallurgical Laboratory, a Fuel Research Laboratory, a National Physical Laboratory, a Central Glass Research Institute, a Technological Laboratory, etc., which when complete would give

proper facility for scientific and industrial research in this country.*

Among private enterprises engaged in industrial and scientific research, mention may be made of the Indian Science Congress Association, the National Institute of Sciences, the Royal Asiatic Society of Bengal, the Indian Chemical Society at Calcutta, the Indian Institute of Science, Bangalore, and the National

* Since the above lines were written, arrangements are in progress for the establishment of eleven new research institutes at a cost of 3.80 crores of rupees. Planned on the lines suggested by foreign experts to cover different aspects of industrial research, these institutions will provide facilities for fundamental and atomic research. Pilot plant will be installed to carry the development of industrial processes to a stage where the industries can take them directly for large scale commercial exploitation. The National Physical Laboratory, now under construction at Delhi will cost about Rs. 78.5 lakhs. The National Chemical Laboratory will be established at Poona, the National Metallurgical Laboratory at Jamshedpur and the National Fuel Research Institute at Dhanbad. The main object of the Institute is to ensure the best use of coal available which has been estimated at 65,000 million tons with an annual turnover of over Rs. 30 crores. The possibility of manufacturing optical glasses in India is being studied in the Central Glass and Ceramic Research Institute. The nucleus of a Building Research Institute is already functioning at Roorkee, Roal Research Institute at Delhi, Central Food Technological Research Institute in Mysore and the Central Drug Research Institute in Lucknow are expected to be ready for research work before the end of this year. For remaining two laboratories, the Central Leather Research Institute, Madras and the Central Electro-Chemical Research Institute, Karaikudi, plans are now being made under expert advice. A census of technical personnel available in India is now being taken by the Council of Scientific and Industrial Research, and it is believed that their number will not exceed 150,000

On the eve of independence, the Council formed a Board of Research on Atomic Energy to advise the Council and the Government on all matters pertaining to the development of atomic energy. On its advice the export of Thorium from Travancore has been banned and Atomic Energy Act is passed giving the Government of India control over all matters connected with Atomic energy development in the country. The Board has worked out a process of manufacture of pure Thorium Oxide from the ore. It is also giving attention to Cosmic Ray research. The Council has under it 24 expert committees which survey the Scientific needs of various groups of industries, e.g., heavy chemicals, electro-chemicals, metals, vegetable oils, cellulose, fuel, dyestuffs, drugs and pharmaceuticals, plastics, leather, building, radio, applied physics and applied instruments and suggest means to develop them.

Academy of Sciences, Allahabad. But as yet there is no all-India organisation to coordinate the activities of these different associations, which is so very essential for avoiding duplication of work. Among the industries taking interest in this matter, the only noteworthy institution is the Control and Research Laboratories at Jamshedpur. Among its achievements, it may be mentioned that "the steel company to-day is able not only to turnout unprecedented tonnages of ordinary carbon steel and structural products, but also develop and supply a rich variety of special steels for machine tools and surgical instruments, for armour plate, explosive and armour-piercing shells, helmets, parachute harness equipment, etc...the special steels developed by Tatas, in addition to being most essential to the war.....constitute an insurance for the future industrial development of India."

In matters of scientific research, the responsibility of the Indian universities is considerable. Of course, most of our universities have arranged for teaching of mechanical and electrical engineering, while the Benares Hindu University includes mining and metallurgy as well. But the defect in our science education lies in the fact that it is more academic, less practical and less related to the needs of industry. But in most cases, the courses of study do not include the most up-to-date line of development in science. Immediate action should be taken to improve in these lines.

But the greatest responsibility in this respect falls on the industry itself; for it is the industry that is going to benefit from research. It must be borne in mind that investment in scientific research is paying, as the experience of the Tata's Laboratories clearly shows during the short period of their existence. If the same line is adopted by bigger units of the industry and if smaller units form associations and arrange research work through them, that will be of immense help. The aim of these laboratories should be not only to carry on research work but also to find ways and means as to how best the fruits of these researches may be utilised in practical field.

Research is essential not only for scientific and industrial purposes but also for tackling business problems. The latter have assumed importance owing to the increase in the size of business. In the words of Cooke. "The only remedy for the big business is

to get back relatively to the position of the small proprietor in regard to knowledge of his business. It must be enabled to know basic facts, facts about its capital, its premises, its staff, its internal working, its customers, its own potentialities, its own tendencies and the general tendencies affecting its future." Although most of our business units are not gigantic in the sense in which they are in western countries, yet in many cases they have gone beyond that limit in which business research is a matter of necessity. The importance of research may not be realised in normal times; but it becomes important when owing to error of judgment or otherwise there is some financial trouble like overcapitalisation. Besides, present day business is associated with risks which can be reduced, if not totally eliminated, by persistent study of such problems as, market fluctuation, changes in the nature of demand, granting of credit, etc. Another side which is most neglected in our country is sale. I have already discussed the problem in *Indian Business*. The function of a good sales organiser is to investigate new demand at home and abroad, to create demand and to make it effective. Producers in western countries do not rest contented with mere handing over of their output to wholesalers; they seek to establish contact with consumers and earn a reputation for their products by effective advertising. In this way enormous sums are spent by big businessmen to bring their products to the notice of the public. This is not all. "Success in marketing may depend on fixing the price or the quality correctly, packing or wrapping the article in a certain way, explaining its uses properly or using the best selling point in the advertising appeal. Though all these points may be attended to, there may be other resistances, ignorance, prejudice or unsatisfactory treatment of dealers and wholesalers. The field of marketing alone offers enormous scope for research." (Cooke).

INDUSTRIAL MOBILITY:

The subject of research is closely connected with industrial mobility which is the "very breath of life" to modern industry. In the words of Balfour Committee. "The vitality of modern industry, like that of an organism, is measured by its power of response to external stimulus and of self adaptation to modified

environment.” We are living in a period when rapid changes are taking place. Wars and depressions are leading to rapid changes in the field of science and in its application to industry. Our advantage lies in the fact that most of our industries are of recent growth, the only exceptions being cotton and jute. But in old industries the need for change is very great. In some of our cotton and jute mills, machinery is about fifty years old. Even in new industries, the management must keep an eye on developments in other countries and move in line if they are to maintain their competitive efficiency.

Industrial mobility however depends to a considerable extent on the mobility in the management factor, i.e., on factors like temperament and capacity for readjustment and adaptation in business management. Conservatism and rigidity in matters business are the causes of failure or at least stagnation and it is a matter of regret that most of our business leaders suffer from “defective sympathy” with new ideas and propositions. Whatever the source of this defective sympathy, there is no doubt that it slows down progress. Matters like rationalisation of workshop practice, standardisation of products and processes, development and utilisation of industrial, scientific and business research, co-ordinated action both in the field of production and in that of distribution, training of personnel and similar other matters require initiative and breadth of vision in management. Nothing can be more prejudicial to the competitive efficiency of our business than the absence of broad vision in them.

QUALITY CONTROL :

Another factor which is coming to assume importance in present day industrial world is quality control. It is being realised that large scale industrial development and production on a satisfactory and uniform level are impossible without the evolution, establishment and maintenance of industrial standards. For this purpose we must make every effort to have our own labels, brands and trade marks and apply scientific knowledge and research to design, specification and techniques as well as to establish national standards in products and manufactures. The Indian Standards Institute has been formed recently for the purpose.

Quality control is essential for establishing a link between the purchaser and the manufacturer. It is true that in these days of shortage of essential commodities and fall in production, quantity, and not so much the quality, has become more important. But yet quality control is essential for improving and maintaining the standards of our product. So far we have worked on British standards and specifications which are not always suitable for our purpose. Quality control in U.S.A. is undertaken by the Bureau of Standards and in England by the National Physical Laboratory. The function of the Indian Standards Institute will be to set up standards for various industrial materials and products. If quality control is undertaken on proper lines, it will result in important economies, simplify operations and increase production. It will also satisfy the consumers, particularly those in the foreign market, who are as yet not very satisfied with the quality of Indian products.

INDUSTRIAL & COMMERCIAL ART:

In these days of standardisation, when any one speaks of art, it sounds out of place. We are living in a period in which even our demands have to be standardised to a considerable extent. But even then, human nature being what it is, it demands change and variety. There was a time—not long ago—when India achieved a great distinction in the manufacture of beautiful industrial products which were in high demand in European markets. Indian products, like silk brocades, the muslin, shawls and carpets, printed cottons, jewellery, etc., were demanded not only for their utility but also for artistic beauty. Before the coming of British Rule in India the country had “a considerable variety of arts and handicrafts which indeed exhibited a more advanced economic and financial organisation than the crafts in contemporary Europe. “The coming of the age of machine and science has led to breaking up the old craft tradition, revolutionising technique and severing or weakening the close relations which previously existed between designer and executant.” Again conditions are changing and concession has to be made to the nature of demand, particularly in those industries which satisfy the instinct of fashion. The development of foreign markets in case of many of our products depends on a careful study of designs demanded therein.

But our difficulties in this respect have been increased owing to the wide gap that separates the original producer from ultimate consumers and therefore the link provided by middlemen have to be utilised. The intermediate agency therefore possesses very wide powers of influencing the standard and trend of current industrial art and it is essential that this power should be exercised with intelligence, sympathy and vision.

The decline of industries that followed the political turmoil of the last century led also to a decline in industrial and commercial art. Indian goods which at one time set fashion in Europe and which were the envy of the best European craftsmen were removed from the scene. The revived interest in industrial art in India is only of recent origin. In this connection mention may be made of Art in Industry exhibition, first opened in 1940 and since then held every year either at Calcutta or Bombay. It set its objects in the following words: "It was felt that such an exhibition was most necessary on the one hand to acquaint artists with the needs of industry, and, on the other, to demonstrate to industrialists the art talent which was available in this country. It was hoped through the 'Art in Industry' exhibition to provide this link and gradually to improve the standard of commercial art in India." So far the exhibition has done more for war propaganda and less for industry. To be useful to industry, it should devote more and more to industrial and commercial art, to a study in the nature of internal, and more particularly external, demand and to a display of designs liked by our foreign customers. Recently an All-India Exhibition was held in Calcutta which was more or less like stock-taking of our industrial development. In addition to private exhibitors, the Central and Provincial Government's Irrigation, Health, Agriculture and Industrial Departments, the P. & T. Department, the Railway Board, the Meteorological Survey, the Indian Museum, Labour Rehabilitation and Employment Exchange and the Patent Office also arranged interesting exhibits. The exhibition could compare well with the recent "Britain Can Make It" Exhibition and the British Industries Fair.

BUSINESS CYCLE & BUSINESS STATISTICS:

The efficiency of business is severely hampered by business cycle which has come to be the permanent feature of present day

business structure. In this country, the whole of the 19th century was full of political troubles. Hence our industrial progress upto 1914 was nothing mentionable. It was only during and after the great war that any beginning in matters industrial was made. Indian exports during the war years increased enormously. But the depression came with the passing away of the postwar boom, and India was most severely hit. For, while the prices of agricultural products fell by about 50 p.c., those of manufactured goods fell only by 30 p.c. This affected our trade, both foreign and inland, and also our volume of production. There was not only a decline in the volume of goods exported but the decline in value necessitated a larger export if the prewar balance of trade was to be maintained. The decline in imports was much less than that in exports so much so that the value of exports and imports in 1932-33 became more or less equal. The slump had affected almost all commodities of export and import but among those most severely affected were twist and yarn and grains. "India is clearly losing even the remnants of her former foreign markets for twist and yarn (owing to Far Eastern competition), whilst the cessation of wheat exports accounts for a large part of the decline in grain exported." (Anstey). Of course, in case of other agricultural products the effect of the depression was neither direct nor so severe as in case of countries where "specialisation and commercialisation" in agriculture are greater; but yet the effect was not altogether negligible owing to the 50 p.c. decline in their prices. The severity of the depression increased all the more owing to the existing debt burden of the peasantry and decline in their purchasing power. But so far as our industries are concerned, the story is different. Leaving aside jute industry in Bengal and cotton textile industry of Bombay, all other industries expanded. Cotton textile industry grew up in many inland centres and the Tata Iron & Steel Company effected improvements. Our cement and sugar industries developed during this period.

In any cases, two things are essential for safeguarding the economy against trade cycle, viz., first, to have a balanced economy and, secondly, the collection and proper analysis of business statistics. The balance of an economic system can be maintained only by a balanced economic development which will enable the country to face the cyclical fluctuation. Another factor of im-

portance is the collection and proper analysis of business statistics. Among other causes of business cycle, the most important one is the psychological factor, a change in the expectation of the business community. Markets to-day being vast, a large part of productive activity to-day has to depend on forecasts of market conditions. None of these forecasts can be accurate and, in them, there is a natural tendency for unnecessary optimism when prospects seem somewhat bright and for corresponding pessimism when they are otherwise. The only real remedy for this is the provision of more complete and accurate information and the cultivation by business community of the habit of systematic use of such data in arriving at practical decisions. In our country the compilation of statistics is very limited, the only available statistics being that supplied by government. Among private sources, a few journals and trade associations have the system but it is partial. To be really useful, statistical information should not only be national but also international. We should not only know the productive activity inside the country but also that outside who will be our competitors. Statistical data for some countries are no doubt available; but the accuracy of many of them is questionable. The collection of statistics on an international basis should have its beginning on the national basis, where the most effective work can be done by trade associations. The most important information required is as follows: (1) Statistics of industrial and agricultural output; (2) statistics of wages; (3) statistics of profits. (4) statistics of price movement and (5) statistics of employment. These statistics will provide with "economic barometer", "with valuable information, hitherto unobtainable except by a process of highly conjectural estimates." If action is taken according to this barometer, it will provide considerable stability in business.

BUSINESS PROFITS:

Efficiency of business is as much connected with costs as with profits. In this respect any analysis is rendered difficult in our country owing to the lack of material. Besides, there is no unanimity among the economists as to what constitutes profits. For our purpose, profits include the disposable surplus, after meeting expenses of production, the surplus including dividend and reserve and other funds, and when stated, debenture interest. Another

important point to consider is the relation of profits to capital, i.e., industrial profit per unit of capital. Of course, there are theoretical arguments against this. Mr. Coates points out that "the amount of real capital employed by any concern is not a fixed amount, although commonly so regarded. When once liquid money capital has been invested in appliances of production or other industrial assets, the value of that capital ceases to be the amount of the money invested and becomes instead a mere reflection of the rate of earnings expected from the investment taken in conjunction with the current or expected rate of interest... Moreover, every change in the price level affects the real capital value of money invested during a period of a different price level, and business prudence operating through accounting methods may also effect considerable changes on an original invested capital. The alternative base adopted, viz., turnover, has disadvantages of its own, though they are not so great as those of capital. The pound of turnover varies with every change in the price level. Although it is difficult to say to what extent the pound of turnover varies with every change in the price level, there is no doubt that a calculation of profit in relation to turnover is more accurate than that of profit per unit of capital. But in view of the lack of figures for the former, we have to take resort to the latter calculation inspite of our recognition of its unscientific nature. In Tables XLV and XLVI an attempt is being made to indicate the number of units in different profit-groups and the capital, profit, gross profit and profit per units of capital respectively. It will be seen that profit per unit of capital is the lowest in case of cotton industry. As many as 17 units have not shown any profit in our sense. This is possibly due to the existence of many un-economic units or the relative newness of many units in upcountry centres. In jute industry the profit seems to be the maximum. This speaks of the success of a few units. For, 14 units have made no profit in our sense while profit for 17 units includes debenture interest. If this is deducted, profit per unit of capital will decline; but even then it will not come so low as in the case of cotton textile industry, the main reason for this being that jute industry in India is the best organised and its control over output and working capacity of mills with a view to maintain prices has been to a considerable extent successful.

CONCLUSION

BALANCED ECONOMY:

The barometer of economic development of a country is constituted of the extent of its industrial and commercial development. A study of the economic development of different countries indicates that before the coming of the Industrial Revolution all countries were mainly 'agricultural'. Since then the world is passing through rapid economic changes and the advanced countries have passed from the stage of primary occupations to that of secondary and tertiary occupations, and the speedier this transition, the greater the extent of economic progress of that country (cf. the author's *Towards Marxian Destination*). The matter can be verified from Table XLVII. It will be seen from the Table that the highest proportion of population is engaged in tertiary occupations in U.S.A., Canada and Britain, while in Germany secondary and tertiary occupations absorb almost equal proportion of population. In Japan secondary and tertiary occupations taken together are at par with primary occupations, while in India primary occupations predominate, and even secondary occupations (e.g., cotton textile, sugar and jute industries, tea manufacture, etc.) and tertiary occupations are dependent on agriculture. This is no encouraging position for us. "Among the richer countries, however, there is apparently a tendency for the proportion engaged in secondary production to fall while the proportion engaged in tertiary production rises." (Clark). If as an independent nation we want to march in line with other nations, we should reduce our dependence on primary occupations and develop secondary and tertiary occupations without delay. There is another reason as well for which we should industrialise. Our population has been increasing at a considerably rapid rate over the last 50 years while our production has remained more or less static. According to the census figures the rate of increase per cent over the previous census figures has been as follows:

1872	—	1911	+ 7.1
1881	+ 23.2	1921	+ .2
1891	+ 13.2	1931	+ 10.6
1901	+ 2.5	1941	+ 15.0

Even if we take into consideration the increase in the area covered by British-governed India and also improvement in the collection of statistics, we must admit that population has still increased during 1872-1931 by about 30.7 per cent. In view of absence of occupation, the whole of this increase is dependent on an already exhausted and worn-out agriculture. Consequently a vast mass of our population is half-employed or unemployed. Full employment is out of question in this country without an occupational redistribution of population. This is also the most vital condition for an upliftment of the standard of living of the masses as also for the development of scientific agriculture, which requires a change-over of the proportion of population from 62 p.c. on agriculture and 14 p.c. on industries to 14 p.c. on agriculture and 62 p.c. on industries. Some people have of course suggested in terms of social readjustment. However desirable it may be, there is no doubt that it is a lengthy process; and "the magnitude of the task of raising 400 million people to a level at which life can really become creative, at which it ceases to be an unremitting struggle for existence and provides opportunity and scope to participate in a broad-based culture, will absorb all our energy and necessitate all possible expansion and development of our material resources." (Gyan Chand). For solving the problem of the pressure of population, therefore, we should strive at a balanced economic development.

COMPETITIVE EFFICIENCY:

The need for industrial development is one thing and its possibility is another. For, it depends upon the fulfilment of certain conditions which taken together may be called 'efficiency'. In the traditional phase of business, whatever brought profit was correct. When a business failed, very few persons bothered about efficiency or otherwise; for, they had no idea of the same, but merely tried to introduce some change according to circumstances, so far as they could judge from a rough and unscientific study, these changes continuing till their efficacy was challenged by a new set of circumstances. Besides, there was no competition. To-day we are living in a stage where competition predominates. These are the days of the survival of the fittest. This competitive efficiency

depends upon a number of factors some of which exist in our country while the others have either to be improved or to be introduced.

To-day India is on the threshold of great economic changes. Under existing conditions the greatest need of the hour is three-fold, viz., industrialisation, increased production and cost reduction. Our present survey was concerned with the last two and we have tried to indicate the existing position, the deficiency and the lines on which improvements should proceed. Efficiency in no case means sweating of labour, as it is often understood in this country. For, even an efficient labourer will fail to give a good account of himself if other factors are not favourable to his working. It is to these various factors that we have addressed ourselves throughout the book. It will be superfluous to summarise the work here. Suffice it to say that in order to secure competitive efficiency as also for reducing prices of commodities from the sky-high levels to which they have reached to more normal ones it is essential that all factors viz., cost, management, rationalisation, size, labour, working conditions, wages, industrial relations and welfare, marketing, research and its application, industrial mobility, business profits and business fluctuations, etc., should receive the careful attention of all concerned. Besides, under existing conditions of our economy, any stimulus to class struggle ideas would be to the benefit of none. Our immediate goal should therefore be to see that our national income increases, and at the same time provides a reasonable purchasing power in the hands of the people.

PRODUCTION TARGETS:

Now a few words need be said on the problems of industrialisation, though its consideration does not strictly come within our present survey. The question of industrialisation of this country has two aspects, viz., expansion of existing industries upto a certain target fixed and starting of new industries. So far as our existing industries are concerned, some of them, possess a surplus capacity, but not all and these require expansion in the near future or as early as possible, when the materials become available, if a certain minimum standard of living is to be assured to all. Thus take the case of cotton textile industry. In this industry our production was about 3,800 million yards of mill-made

cloth and 1,500 million yards of hand-loom cloth in more normal times. In recent years production has further declined, being only 3,775 million yards in 1947-48. If we take the figures for normal times, yet we must say that it was able to provide only 15 yards of cloth per head per annum, whereas 30 yards are regarded as essential for a fair standard under Indian conditions. The National Planning Committee has suggested an expansion of production by 1,700 million yards, which means that about 18 yards of cloth will be available per head per annum. For the purpose it is suggested that the 18,73,000 new spindles have to be added to the existing 10,295,445 in January 1945. If 30 yards of cloth is to be provided, spindlage will have to be doubled. In woollen textile, during 1939-45, we had 15 mills with 50,000 woollen spindles, 37,000 worsted spindles, 2,300 power looms and 500 hand-loom in the mills, our production being only 7,927,000 lbs. and imports 11,100,000 lbs. A number of new plants have however obtained licences and these are expected to meet up the gap. In silk textile, there are two varieties, viz., natural product and artificial silk and rayon. In the natural silk industry, the production of cocoons is a cottage industry. At present we produce about $1\frac{1}{4}$ million lbs. of silk, the consumption being about 10 million pounds. For meeting our requirements it is essential that mulberry cultivation should be improved by arranging adequate supply of disease-free seeds, controlling the diseases of silk-worms and also by effecting improvements in rearing, reeling, organisation, marketing of silk, etc. It is also essential that the spun silk industry should be developed and co-operation between the different silk-producing regions instituted. In this respect the responsibility of the state is great and it can help the industry by encouraging research, by collection and dissemination of the knowledge and interests of all silk-producing areas, and by arranging technical assistance. For facilitating marketing and elimination of unnecessary middle-men the product should be standardised and the industry should be protected against the competition from artificial silk. So far as artificial silk is concerned, our consumption figure is by no means negligible and artificial silk worth Rs. 459 lakhs was imported from Japan during 1939-40. For meeting this whole demand about 12 factories, producing acetate rayon and viscose rayon, with a capacity of 10

tons per day, have to be started. The best location for the purpose would be in Bombay, C. P., Bengal, Madras and Orissa and also Mysore, Travancore, Rewa and Tehri-Garhwal. The raw material for the purpose, vid., cellulose is abundantly available in cellulose bearing materials viz., cotton, bamboo, wood, bagasse, hemp, reeds, etc.

Turning next to the paper industry group, there are three types, viz., paper, newsprints and boards. Although the number of mills has increased during the war from 10 in 1938 to 16 in 1944, as yet we produce far below our existing consumption, whereas newsprints we do not produce at all. We produce about 90,000 tons of paper and 24,000 tons of board. According to the N.P.C., our consumption of paper by 1956 will be as follows: 3,12,000 of paper, 1,00,000 newsprints and 1,19,000 boards. Hence if we are to reduce our dependence on imports, every effort should be made to increase production of all varieties of paper as much as possible. For the purpose a survey should be made of all cellulose raw materials. For the manufacture of newsprints sufficient soft wood is available in Kashmir, Punjab and Tehri-Garhwal forests. For the rest, Bombay, Bengal, Madras, U. P., C. P. & Berar, Orissa and Hyderabad State would provide the best location. Every care should be taken to see that the future expansion of the industry is evenly distributed as between different regions. So far as the state is concerned, it should continue protection to the industry. In this respect the recommendation of the Tariff Board has been unfortunate. It recommended that the existing protective duty should be allowed to expire with effect from April 1947 and thereafter revenue duties should be imposed on protected varieties on purely budgetary considerations. This recommendation has been given effect to. In this connection it should be noted that the industry requires a lot of research work, particularly for reducing its dependence on imported pulp; and yet the Paper Pulp Section of the Forest Research Institute has not been able to proceed much for want of adequate financial assistance. The section needs a thorough reorganisation. Besides, the production of newsprint may require direct financial assistance from the Government.

The organisation of the glass industry varies from the cottage industry type to large scale units, both proprietary and under the

managing agency system. It produces a large variety of articles viz., bangles, hollowware, bottlewar, sheet glass, pressed ware and fancy goods, scientific glassware, rods, test tubes, glass shells for bulbs, etc., and a few more lines have to be undertaken, viz., beads and false pearls, plate glass and optical glass, etc. In those cases where production has already started, it is essential to expand them in order to meet the requirement. The prewar consumption, present capacity and the targets of production fixed by the Panel for various types of glass ware are indicated in Table XLVIII. The location of the new plants should be rationally selected, the most important factor in this respect being nearness to market in view of the fragile nature of the product. Among other factors influencing the future location of the glass industry, importance should be attached to economic production and efficient utilisation of transport facilities and resources. In those lines where private enterprise is not forthcoming, e.g., plate glass and optical glass sections, the state should come forward. Even for the rest the state should undertake survey of raw materials, encourage research and mechanisation, influence the future location of the industry by what is known as industrial licensing offer protection and rationalise the railway freight with a view to make it homogeneous.

In sugar industry at present we have about 154 factories of which 103 are in Bihar and U.P., average annual production during 1939-40 to 1944-45 being 1,084,000 tons. The National Planning Committee has suggested the target of 16 lakh tons by 1,950, this being done in following way: 1,70,000 tons by increased supply of sugar cane to the existing factories, 1,00,000 tons by expansion of the existing uneconomic units and 2,00,000 tons by installation of new units. This however should not be regarded as the final figure. For, the present consumption of sugar in India is too low and as soon as this target is reached, a fresh target should be instituted. The power alcohol industry is closely connected with the sugar industry. The prewar consumption of power alcohol was 100 million gallons of which only 17 million gallons was produced in India. In recent years its consumption has greatly increased and if this is to be met, it should be extracted from the molasses. Target production of sugar will enable us to obtain molasses which may supply about 20 p.c. of our postwar

requirements. For the purpose it is essential to start about 20 distilleries with an approximate productive capacity of one million gallons. In the oil industry our present production capacity is about 160,000 tons which means a per capital consumption of about 12 oz. If the per capital consumption is to be doubled, which it should be, in that case production figure should also be doubled. In the cement industry, our production capacity was about 3 million tons, this being distributed as follows: Associated Cement Company 18,62,000 tons, Dalmia 560,000 tons and other works 360,000 tons. Under existing demand, the output should be raised to more than double. The A.C.C. and Dalmias submitted plans to government for an expansion of their productive capacity by 1.75 million tons which were accepted by the government in March 1945. Leather supply in India is by no means negligible; but a considerable supply of hides and skins is exported as can be seen in Table XLIX. With the development of tanning and leather goods industry, India will be able to use all these resources. In fact, export of these valuable resources should be banned or at least restricted. The indigenous tan stuff are babul bark in North India and avaram bark in South India. In recent years these are being replaced by wattle bark imported from South Africa and Kenya. Measures should be taken to introduce large scale wattle plantation in this country. Before the war, India used to produce about 700 million pairs of shoes of indigenous type and 30 million pairs of shoes of western type. If the whole supply of hides and skins is utilised internally, we can increase the supply of shoes much more. Besides, the leather goods industry will also develop, both civilian goods like trunks and suit cases, ladies' handbags, purses, wallets, etc., and industrial goods like leather machine belting, etc., and also military goods. The industry, if developed, will provide us with valuable by-products like glue whose imports before the war amounted to 15,000 tons and also with leather boards and give encouragement to the machinery industry as subsidiary. The vanaspati factories in India at present use groundnut oil as the main raw material, and not so much the cotton seed oil which is an equally useful raw material, and it is essential to explore possibilities of its use.

Finally, we should devote our attention to the chemical

industry, which, really speaking, is a key industry. We have seen in previous discussion that this industry, which is of national importance, has not developed much in this country. This is not due to the fact that raw materials for the industry are lacking or that trained labourers are not altogether available. In the words of the N. P. C., "The country is by no means poor in regard to basic raw materials, technical skill and other pre-requisites for the successful establishment of this industry. Advanced scientific research may be lacking, though even in that regard,...scientifically trained man-power in this country, if not of the very highest, at least of sufficiently advanced character, is so large that all the reasonable needs of technical skill may well be met from our own resources. And if a deficit is still left, technical skill of this kind would not be difficult to obtain from the more advanced countries." The industry has got two branches, viz., fine chemicals and heavy chemicals. Fine chemicals group include fine chemicals and synthetic drugs, synthetic perfumes, synthetic organic chemicals, etc. At present India's production of fine chemicals is practically nil, though in 1939-40 India imported fine chemicals worth Rs. 2,20,53,000. The raw materials for the industry are not unavailable in this country. They are coal tar, petroleum, wood distillation and fermentation industries, some vegetable and animal products. Turning next to other chemical industries, even in their case we are not lacking in raw materials and not so much even in skilled labour and under the changed political conditions to-day it should be possible to expand the industry up to our requirements. The position is shown below :

The raw material position for dye stuff industry is on the whole favourable, e.g., coal tar raw materials, viz., benzene and toluene will be sufficiently available if the distillation of coal tar is started on an extensive scale. Recently, however, the process has been started at Jamshedpur, and installations of coal tar distillation have been made by the Shalimar Tar Products Ltd., the Beraree Coke Co. Ltd., and M/S Bengal Iron Co. If the present rate of coal tar production is maintained, then it is estimated that over the next decade approximately 55,000 tons of tar would be available for distillation per year and this would give annually the following principal finished raw products for the

dye and drug industries: Benzene and toluene 390 tons, other light oils 145 tons, phenol 165 tons, cresols 165 tons, naphthalene 2,400 tons, creosote 16,000 tons, anthracene 165 tons and pitch 31,500 tons. The above quantities are sufficient for our purpose, except in case of benzene. But its supply can be increased by recovering the same from the gaseous products of coal distribution. Among the inorganic heavy chemicals, viz., sulphuric, hydrochloride and nitric acids, caustic soda and soda ash, their supply is not much at present but can be increased. For the purpose for sometime it will be essential to import a considerable part of the plant; but our aim should be to develop the full-fledged chemical engineering industry in this country, "capable of designing and producing all the machinery and equipment for the chemical industries including the special plant which can withstand the stringent conditions of corrosion, temperature and pressure involved in modern chemical processes." Regarding sulphur and sulphuric acid we have already seen as to how their supply can be increased in this country. In 1937 we had 23 factories producing sulphuric acid, besides 6 others producing for their own consumption, the quantity produced being 30,000 tons. By 1943, production went up to 93,000 tons. With the development of iron and steel industry, textile industry, etc., the demand for the same is likely to go up and the target should be fixed at twice the present production over a period of 10 years. The prewar production of caustic soda in India was negligible, this being mostly imported. During the war, its production was undertaken by the Tata Chemicals and Mettur Chemicals and the quantity produced annually was 10,000 tons. In future we have to raise its output to at least five times. The raw material required for the manufacture of caustic soda is common salt or sodium chloride, of which there is no dearth? Caustic soda, chlorine, bleaching powder, potassium chlorate, sodium cyanide, calcium carbide and graphite may be produced by the electro-chemical and electro-thermal processes. At present the Titaghur Paper Mill, Bengal Chemical & Pharmaceutical Works and Mysore Paper Mills produce a small quantity of chlorine, bleaching powder and caustic soda. Many cotton mills have their own small plants for the production of chlorine to meet their requirements of bleaching materials. The production of these chemicals can be

increased with the development of cheap electrical power in this country.

Before the war the production of chemicals like sodium carbonate, sodium bicarbonate, potassium chlorate, sodium sulphide, bichromates, etc., was practically nil. During the war, three factories have been started for producing sodium carbonate, annual production being 74,000 tons and one of the factories producing soda ash releases 1,500 tons a year. The raw material for the same, viz., salt, limestone, ammonia or its salt are available, and their production has to be increased. The production of potassium chlorate requires potassium chloride and cheap electric power and is at present produced by the Mettur Chemicals, the quantity being only 300 tons. It is required to increase its production by five times. The quality of aluminium sulphate allum and alumine produced in India is quite upto the standard and are essential for purification of water and in the manufacture of paper. But the aluminium sulphate at present produced in this country contains iron and hence cannot be used in the dyeing process. This variety has therefore to be imported. But it is quite possible to produce aluminium hydroxide, an intermediate product for the manufacture of aluminium sulphate and already there are schemes for the production of this intermediate product in this country. If these schemes materialise, our dependence on imported supplies will be reduced.

The manufacture of hydrochloric acid, ammonium chloride, zinc chloride, sodium sulphate and sodium sulphide are connected. Sodium sulphate is used in paper industry and sodium sulphide is used in the dyeing and tanning industries. At present they are imported, though recently a factory has been started at Jodhpur for producing sodium sulphide with a production capacity of 3,000 tons. The development of these industries will give us anhydrous hydrochloric acid as byproduct, which in combination with zinc and ammonia will produce zinc chloride and ammonium chloride respectively. In 1932 the Tatanagar Chemicals Co. Ltd., started the manufacture of 85 p.c. Zn Cl_2 with galvanisers' pot skimmings as raw material but could not compete with 98 p.c. grade imported product which was sold at the same price as 85 p.c. grade. This was so because the manufacturing difficulties involved in raising the purity of the product

proved to be an obstacle; but with the production of sulphuric acid at a lower cost this difficulty will disappear. For photo chemicals, the raw materials are soda ash and sulphur. The former is being produced inside the country by three factories, but the latter has to be imported. Before the war, photographic chemicals were not at all manufactured; during the war however a number of small factories have been started. Another important thing for our purpose is ammonium sulphate, a product from ammonia and sulphuric acid. Ammonia can be produced synthetically and in Mysore State a synthetic ammonia plant has been installed which has a productive capacity of 3,000 tons of anhydrous ammonia. To some extent of course it can be secured from the distillation of coal but for the rest synthetic product will have to be produced. Most of the ingredients of the soap industry, viz., oils, fats, resins, caustic soda, are available inside the country. So also in case of paints and varnishes. India has also great possibilities as a producer of drugs and medicines, of which a considerable development has taken place during the past few years being 66 p.c. of our requirements and for which raw materials, viz., various inorganic chemicals, synthetic fine chemicals, vegetable and animal products, coal tar and wood distillation products, fermentation products, etc., are mostly available inside the country and India should strive to be sufficient as regards the supply of drugs and medicines. There are immense possibilities in this respect.

OUR FUTURE MINERAL POLICY:

In the first chapter we have considered the position of our raw material supply, because it constitutes one of the major cost items and those countries which have to depend on the imported stuff are likely to be handicapped in competition. In this respect our position is, on the whole, satisfactory. In this connection the memorandum prepared for the works, Mines & Powers Department of the Government of India gives assuring information. According to this, India's minerals of strategic and defence importance could be regarded as adequate, although in parts only. Thus whereas there is a serious deficiency in munition metals like tungsten, tin, lead, zinc, mercury and also in graphite and liquid fuels, in the basic metals, iron, manganese, aluminium, magnesium

and chromium, the country is well-supplied in first three, in large excess. The mineral resources of India have been divided into four categories:

(1) Minerals of which India's exportable surplus can dominate world markets, e.g., iron ore, titanium ore, mica;

(2) Minerals of which exportable surplus forms an important factor, e.g., manganese ore, bauxite, magnesite, refractory minerals, steatite, silica, gypsum, monumental granites, monazite, corundum and cement minerals;

(3) Minerals in which this country appears at present to be self-sustaining, e.g., coal, aluminium ore, gold, mineral pigments, sodium salt and alkalies, rare earths, glass sand, nitrates, phosphates, etc.; and

(4) Minerals which we have to import, e.g., copper ore, silver, nickel, petroleum, sulphur, lead, zinc, tin, fluorides, mercury, tungsten, molybdenum, platinum, graphite, asphalt and potash.

In the above list India's mica has generally dominated markets; her bauxite (aluminium ore) is ample for her needs; her manganese deposits are extensive and well-distributed; in Salem district alone 'new discovery has revealed 80 million tons of magnesite valuable to the cement, glass, paper, rubber and aircraft industries. Reserves of gypsum for artificial manures show an immense surplus over requirements; titanium minerals are an important part of India's total mineral wealth and her supplies of thorium (important in Atomic research) are very valuable. The 8,000 million tons of iron ore in Singhbhum and Eastern States are only part of her resources and geologists predict that India will have great reserves when the stocks of most other countries are depleted.

It should be noted in this connection that it is essential to exploit our mineral resources, particularly the new ones, according to the most up-to-date scientific devices if we are to derive the maximum benefit from them. For the old-time methods of surface prospecting does not appear suitable to our new mineral deposits. This should be substituted by the new geo-physical methods, such as, the electrical, gravimetric, magnetic and seismometric investigations. These methods are expected to bring to light some hitherto undiscovered but suspected deposits of petroleum, a few new

coal fields or extension of old ones, underground water deposits and metallic lodes.

The question of nationalisation of minerals is an important one and on theoretical grounds has received almost universal approval. But as things are at present, leaving aside administrative inefficiency, nationalisation of this limited sector even would not be practicable in this country until the mineral rights are acquired by the state, nor can state management with private ownership be expected to be effective. Hence while the policy should be for the state to develop new mineral resources, so far as the old ones are concerned, management through public corporation would be a better solution if operated with following principles in view:

(a) minerals should be owned and exploited by the nationals of the country, and not by foreigners;

(b) all mineral development should be regulated by the government, whether Central, Provincial or State; and

(c) for minerals there should be Central coordination in order to ensure their wise utilisation in the general interest.

Energetic step should be taken to expand Geological Survey of India and to improve the facilities for Geological Education, as recommended by Geological Education Committee.

FUNDAMENTAL PRINCIPLES OF AN INDIAN PLAN:

Since the publication of the Bombay Industrialists' Plan, we have seen a large number of paper plans being formulated in this country, none being comprehensive enough. That is due to the fact that each is influenced by a particular ideology and hence the ideological conflict has made a mess of all things and practically no planned action has been possible so far. To be truly effective, industrial planning in this country should not be based on any ideological conflict. We do not want either Fascism or Sovietism, capitalistic imperialism or aggressive nationalism. We want a purely Indian plan profited by developments in other countries, with a view to the utilisation of our resources and the attainment of a balanced economy. Any attempt at fundamental reconstruction of existing economic system at present will lead to such disequilibria as to make progress impossible. Economic progress

must precede any fundamental change in economic structure. But one thing is certain. Industrial progress of our country depends on the increased purchasing power of the masses, the overseas demand for our industrial products in normal times being almost negligible. In other words, industrial progress of this country is closely associated with the creation of purchasing power in the hands of the masses, rather than by the concentration of more money in a few hands or by haphazard deflationary programme. Thus, for example, if we take the present consumption of sugar per head of the population as normal, our sugar industry, so far as its production capacity is concerned has already reached the saturation point; but in comparison to the consumption of sugar elsewhere, our per capita consumption is much low. With an increase in the purchasing power of the masses, if the per capita consumption of sugar can be increased, only then is there any possibility for the expansion of our sugar industry. This is only an illustration and this is true in other industries as well. And the greater part of our population being agricultural, any plan for industrial development must proceed side by side with the introduction of scientific agriculture. Therefore any coordinated scheme for the economic development of India should include the following items:

1. All-round development of Indian agriculture, and occupations closely connected with agriculture, including cottage industries.

2. A proper coordination between developed industries and cottage industries, the latter being either non-competitive or merely complementary in character.

3. A proper coordination between different units in each industry, thereby eliminating not only uneconomic competition but also the uneconomic units. Co-operation in matters of purchase and distribution should take the place of individual action.

4. A scheme for the rationalisation of our industries, particularly old industries, which still continue to use old plants and equipments.

5. A scheme for the control of output and prices of some of our already developed industries or an effective policy for the expansion of market, both internal and external.

6. A proper coordination between the policies of different provinces, centre and Indian states in economic matters with a

view to the all-round and systematic development of all regions of the country.

7. A scheme, on lines suggested in previous chapters, for increasing the efficiency of Indian business, and thereby to improve its competitive position.

WITHER PRODUCTION:

While there is so much need for increased production so that it may reach the target figures in a decade or so, production in this country is going on declining since the cessation of hostilities, and more particularly, since the attainment of independence. Writing in the *Leader* (Allahabad), one year back, under the heading "*Production Drive*," I argued as follows:

"The need for a production drive presents itself for more reasons than one. It is not only essential for meeting our basic shortage of food stuffs and other essentials, but also for the sake of obtaining full employment, for the establishment of a balanced economic system in this country, and even for meeting international complications such as dollar crisis which have become acute in recent months."

Since then I have been viewing with gravest concern the gradual fall in production in this country. And yet the question was, if not altogether neglected, treated with somewhat indifference with the consequence that prices went on increasing. Recently, the country-wide discussion on the problem of inflation has focussed the attention of all to this aspect. Whatever view our grey-haired economists may hold about inflation, the fact cannot be denied that shortage of essential commodities is not merely relative to the volume of money injected in the economic system, but is absolute in the sense that production to-day is much below the war even prewar, levels. The economists have no doubt hinted at increased production, but have laid more emphasis on monetary aspect rather than on commodity aspect which is more important. As we shall see afterwards, any suggestion for deflation, or even for controlled deflation, would not only accentuate the inflationary problem but would be followed by a chaos. Hence production is to be adjusted to money rather than the other way round. And yet production has been declining, thereby widening the gap between

exchangeable commodities and effective money, and accentuating the inflationary spiral. We have had Grow More Food campaign; we preached production drive and industrial truce, with what results? Under the G.M.F. campaign for the last seven years, the Central and Provincial Governments have spent Rs. 31 crores, have fixed big targets and distributed tonnages of seeds and manures, and financed "minor" irrigation projects; and yet "no easy and dependable method is available to assess accurately the increase in the food grains production resulting from the G.M.F. campaign." A Government Press Note claims the increase in food production by 3 million tons, while the Department concerned puts it at 12 million tons. According to the same Press Note, the estimated production is 56 million tons and requirement 64 million tons. If 12 million tons have been added, that means, India is having 68 million tons, i.e., a surplus of 4 million tons. If the addition is only to the extent of 3 million tons, still India ought to be better off than she was before 1939. Yet India imported 2.5 million tons of food grains last year, a record figure. A more sensible estimate of food grains production seems to be 44 million tons in 1945 and 40 and 41 million tons in 1946 and 1947 respectively. One fails to understand why this discrepancy in statistics. In any case, whether surplus or not, the situation has not improved. Planning for plenty we are familiar with; but planning for poverty is a new innovation. So also in industrial production, as can be seen in Table L comparing industrial production for 1945-46 and 1946-47. By 1947-48 it has come down still further. We produced 4.651 million yards of cloth in 1945-46 and only 3.775 million yards in 1947-48. Our production of steel came down from 1,338,000 tons in 1945-46 to 1,160,000 tons in 1946-47 and 1,037,000 tons in 1947-48; and that of cement from 2,146,000 tons in 1945-46 to 1,637,000 tons in 1947-48. Even in the current year the downward tendency of industrial production has been maintained, as can be seen in Table LI.

Why this? So far we have seen a lot of blaming and counter-blaming. The labour is often blamed for this, and to a considerable extent justifiably. The Employers' Delegation to the U.P. Government Enquiry Committee pointed out a few months back that efficiency in textile mills had shrunk in recent months to 70 p.c. of the normal, the contributing causes being the system

of giving dearness allowance on mere attendance, having nothing to do with production (57 p.c. of wages being earned for mere attendance and 43 p.c. by actual labour) and "fatiguing" consequent upon reduction in working hours which have attracted them to weaving on cottage-industry basis. According to the Waterfield Committee on Cotton Textile Industry in Bombay City and Suburbs, during the year ended July 1947, the percentage of absenteeism varied between 12.83 and 18.15 while its range was only between 7.17 and 9.13 in corresponding period in 1937-38. No body would object to the amelioration of working class conditions, but not surely at the cost of efficiency. Besides, strikes have increased since 1945, being 820 in that year, 1629 in 1946 and 1703 in 1947. In the quarter following industrial truce there were 454 strikes involving a loss of 3 million man-hours, as compared to 389 strikes leading to a loss of 1.8 million man-hours in the quarter preceding the truce. But more important factor often passing unnoticed is the strike by capital. It is wellknown that the 2½ p.c. 1962 Government Loan for Rs. 40 crores floated in October 1947 failed to bring any cash subscription and the outstanding balance of Rs. 30 crores of 2½ p.c. 1948-52 loan due for repayment on July 15 had to be paid in cash. The promised Freedom Loan is yet to come. And yet Indian capital which feels shy to-day was invested to the extent of Rs. 400 crores to a foreign regime in India for financing a war in which India's interest was not involved. The industrial policy of the Government, the political situation in the Far East, uncertain future outlook in the country and Government's failure to implement any economic programme etc., have all added to the investor's hesitancy and production in free India is declining at a rate almost unprecedented. Even to the extent to which goods are being produced, they cannot be distributed for want of adequate transport facilities. Thus J.R.D. Tata said on 24th October 1948 that "we have at this moment a stock of 80,000 tons of finished steel and 63,000 tons of pig iron, which is congesting our works and hampering production. Such large tonnages of finished material also represent an enormous amount of capital unnecessarily locked up." What is true of our iron and steel industry is true of cotton textiles, sugar, cement, etc. We have also seen in above table how the coal despatch has declined and accumulated

pit-head stocks are much in excess of the normal. This has hampered production all the more.

INFLATION AND STATE ACTION:

The above factors have resulted in decreased production which has intensified the inflationary spiral. Deficit financing by the government was already there and it was responsible for the war-time inflationary gap to the extent of about Rs. 1,299 crores, covered by the printing machinery of the government. In place of 169 crores of rupees worth of notes in circulation in 1939 to-day we have more than 1,200 crores, and yet the country has become smaller to-day and so also population. In fact, total note issue from June 1946 to December 1947 remained almost stable; but after September 1947, there began an increase in note circulation and upto February 1948 this expansion was met out of notes held in the Banking Department. After this, additional notes were issued against Rupee Securities—80 crores during the first six months of 1948 and 140 crores since September 1947. This inflationary situation came in for a good deal of discussion recently when all shades of opinion considered the matter and suggested plans for launching an all-pronged attack on the inflationary monster. Among other measures, the Government has decided to impose limitation on dividends. An ordinance provides for the limitation of dividend to the average annual amount distributed in cash in two years ending March, 1948 or 6 p.c. of paid-up capital of the company whichever is higher. In calculating the amount of average dividend distributed in the past two years, adjustments will be made for any alteration in paid-up capital. The rights of holders of preference shares will not be affected but the return on future issues of such shares will be limited to 6 p.c. The ordinance will not affect in anyway those who have invested their money in industry. If past level of profits is maintained, investors will continue to receive practically the same return on their capital as they have been receiving hitherto. For new investors a return upto 6 p.c. is allowed. The same return will be available to investors in undertakings which have distributed small dividends or no dividends at all in the last two years. The ordinance merely limits dividend and any profit not distributed will remain with the industry and be available for its developments.

The above measure is good enough so far as it goes. But how to increase production and employment which is our immediate problem? In this respect the Government does not seem to have adopted a sound enough plan and hence action in the following lines should be immediately taken for speeding up investment. The government's aim should always be an expansionist economic programme, rather than a contractionist policy influenced by the ideas of "Sound Finance" as it is already pursuing. The immediate problem to be taken up should be unemployment reduction which should be financed by Employment Creation Bills, for such purposes as housing, roads, agricultural and suburban settlements, river regulation and flood control, public utilities, etc., the bills being redeemable out of a sinking fund. This no doubt will place increased purchasing power in the hands of the masses; but this need not cause worry in view of the productive nature of the programme. Side by side, liberal taxation proposals exempting sums spent out of profits or reserve for replacements and renewals in agriculture and industry should be the feature of the budget for a few years. Personal influence of the leaders as also of the Congress Party being enormous, it should be mobilised for inducing the capitalists to invest and create employment. For, once the move starts, employment multiplies employment. If the banks find it hard to finance the Employment Creation Bills, arrangement can be made with the Reserve Bank for their discounting. Complete reorganisation of agriculture is essential. With present slow methods of reclamation of waste lands here and there, talk of the abolition of Zamindari system without quick action, inadequate irrigation facilities in the Indian Union, agricultural production also is bound to recede. Whatever our long-run objective may be, our immediate task should be to reorganise agriculture under the Provincial Agricultural Department or Food Department in such a way as to include all—zamindars, cultivators, tenants, labourers, graindealers, co-operative societies, marketing associations, etc.—each one being entrusted with the attainment of a possible target for which the organisation should be responsible. Haphazard production and marketing encourage greater waste. The provincial or regional organisation should also determine production, price, import, etc. Steps should also be taken for compulsory consolidation of peasant holdings by law,

without which scientific agriculture will never come. Industries ought to be placed under certain groups, like consumption goods, machinery, electricity and power production, mining and metallurgy etc., each being coordinated under the Ministry of Economic Affairs.

A few words need be said on control over distribution. In general, when the available stocks of goods for distribution are less than the requirement, control becomes essential for promoting equal distribution. The Government have therefore been in favour of re-control. But it should be remembered that controls constitute good palliative, but without definite schemes of speeding-up production, prolonged controls breed corruption. And our controls are halfhearted, neither universal nor having anything to do with production, with consequent loopholes, as is our experience during the past few years. They have resulted in malnutrition and under-nutrition; they have made the rich richer and the poor poorer, often passing off unsung, and the middle class losing its all. The mere talk of controls create jubilation in a certain group and commodities start disappearing. Hence Mahatmaji started good doctoring, but unfortunately with his passing off, we have started undoing his advice. But what is more tragic is this that even the available stocks are not distributed with consequent blocking of so much of the capital and this hampers further production, as is already indicated. Hence it would have been wiser to leave distribution to take care of itself, to release all powers and influences in the hands of the government to stimulate production and to increase available transport facilities. It should be remembered that even when control is instituted, it is done only in a few cities, without affecting the interiors or encouraging production. This is a direct stimulus to black marketing and corruption. The only way of putting an end to this is either to institute a full-fledged control not only over distribution but also over production or to give up control altogether, and concentrate on improved transport facilities, while leaving distribution altogether to private agencies.

ROLE OF THE STATE:

In this connection a few words need be said on the role of the state in the Indian economy as it is to-day. In this respect we

should not be guided by economic sibboleths. There are people we conceive that the substitution of the state in place of private capitalism is synonymous with socialism. Nothing of the kind. Elsewhere I have written. "There is nothing to choose between the two (viz., laissez faire and state interventionism) apart from the factor of effectiveness according to changed times and circumstances...state capitalism is no alternative for socialism. it is only a substitute, and indeed a more effective one, for private capitalism." Hence the part that the state is going to play is to be viewed from the standpoint of efficiency rather than from that of dogma. In recent discussions many people have supported nationalisation of many of our industries. There is nothing to say against such a step provided it expedites the pace of industrial development.

Thus the Economic Programme Committee of the A. I. C. C. holds:—"New undertaking in defence, key and public utility industries should be started under the public ownership. New undertakings which are in the nature of monopolies or in view of their scale of operations serve the country as a whole or cover more than one province should be run on the basis of public ownership. This is subject to the limit of the state's resources and capacity at the time and the need of the nation to enlarge production and speed up development.

"In respect of existing undertaking the process of transfer from private to public ownership should commence after a period of 5 years. In special cases a competent body may, after proper examination, decide on an earlier transfer...

"The process of transition to public ownership should be controlled so as to avoid the dislocation of the economic life of the country, fall in production, uneconomic acquisition of inflated assets and the diversion of valuable resources from more urgent to less urgent uses."

In its announcement of the industrial policy, the Government has placed the industries into three categories, viz., industries which would be completely a state monopoly, industries whose future development would be controlled and owned by the state and industries which would be left to private initiative. It is however made clear that the existing units in the second category would not be taken over by government immediately, at least for next 10 years. But five years or ten years is too short a period and in

these days when a thorough reorganisation and re-equipment of our existing units are essential and when reorganisation would take a long period particularly in view of the non-availability of many materials, the prospect of nationalisation after five or ten years would hamper private initiative and would thus be detrimental to efficiency. Besides, in those cases where nationalisation has been resorted to at this stage the results are not encouraging. To take an instance, the Cawnpore Electric Supply Administration is working under the Public Works Department for the last one year. The CESA is so busy in fully establishing its sway on this new type of work that a clear picture of the year's gains and losses is not available. But this much is sure that it has not made any profits; it has possibly incurred some losses and the revenue has come down by Rs. 2 lakhs during the first $4\frac{1}{2}$ months of government management. The CESA has therefore proposed for a revision of rates. "Substantial increases in the cost of production and distribution of electrical energy at Cawnpore have taken place due to various causes including the rise in the price of coal, cost of stores and spares, rise in the cost of living index and consequential increase in the payment of dear food allowance and wages." These factors are not new and are in operation for the last few years and yet if the CESA finds it difficult to earn a 3 p.c. return on capital, naturally it must have suffered in efficiency. There is nothing sacrosanct about nationalisation, particularly in the present stage when the state's armoury is too empty to prove efficient in all directions.

The case against nationalisation in India is all the more intensified in view of the existing administrative weaknesses, which at times enter the border of corruption, if we may say so. This is an open secret but cannot be eradicated. Private capitalism has surely the monopolist's weakness of exploiting the consumers; but if there is threat of competition, internal or foreign, private capitalism will be doing a lot to maintain efficiency. True, under existing circumstances state capitalism is more effective; but it is true provided all is well with the state. In fact, capitalistic democracy thrives on the ignorance of the masses. But a foreigner is free to utter his verdict in this respect; and such one is Sir Theodore Gregory, formerly Economic Adviser to the Govt. of India. He writes:

"The paramount problem is the establishment of what may be

called impersonal standards of behaviour on the part of the authorities with whom the ultimate responsibility will rest. The pull of family, of friendship, of community, of party is immense. The ante-rooms of Ministers and of leading civil servants are not in fact filled with purely disinterested individuals, only desirous of the public good. However scientific the plan, a considerable margin of debate exists, and the debate is not always conducted on lines which would be considered reputable in the common rooms of British universities...one has to ask oneself: What are going to be the true incentives which will sustain the vast administrative, technical and industrial effort that will be required, not for a few months or a few years but for decades? One has to picture to oneself not some higher official, in an air-conditioned room at Headquarters, supplied with glittering car and secretaries and all the attractions of a modernised urban centre (including the due measure of adulation and "write-up" in the local or even the world Press) but the thousands of humbler folk in obscure provincial centres and villages, battling with local indifferences at best and local opposition at worst, with the heat and the flies and the pressure 'to do something for somebody' on telephonic instructions from some all-powerful person at the mysterious centre, and who are expected to produce the results."

Hence all theoretical arguments for nationalisation should be set aside till we attain the impersonal standards of behaviour which cannot be attained till the first enthusiasm of independence and scramble for power are over. But we cannot lay down the exact date-line for the same.

MINISTRY OF ECONOMIC AFFAIRS:

But then a clear distinction should be drawn between nationalisation and central planning. While nationalisation may be a distant objective, central planning should be our immediate goal for the conservation and better utilisation of resources, elimination of wasteful competition and for avoiding unbalanced economic development. Within the radius of central planning, if the state's resources are applied for starting new industries without interfering with the existing ones, except where absolutely necessary, state's action would be a constructive addition to the existing production

rather than a mere change-over from individual to the state. Time is an important factor at present and hence it is essential to cry a halt to all paper plans of which we have too many and for which we have already wasted too much money which a poor economy like that of ours cannot afford. To expedite matters, a separate Ministry of Economic Affairs should be established at the centre and similar regional organisations should be instituted in the Provinces, with men of more practical bent of mind rather than with men with party, family or similar affiliations.

COST ADJUSTMENT & TARIFF BOARD:

Apart from central planning, state action should encourage cost adjustment by stimulating efficiency in our existing industries. This innovation was first adopted by Germany during the second great war and subsequently picked up by America for arresting the rise in price level and it proved to be sufficiently effective. Our discussion so far has made it dear that in our existing industries all is not well and in every respect there is a considerable scope for cost reduction. This function may be entrusted to the Tariff Board. Recently the functions of the Tariff Board have been broadened. One such function is "to enquire as and when required by Government into the cost of production of a commodity produced in the country and to determine its wholesale, retail or other prices, etc." This function may be broadened still further so as to make the enquiry compulsory for determining the lines in which deficiencies exist and suggestions should be offered for removing them. This being done, cost reduction is still possible, not by bringing down wages and other remunerations, but by increased efficiency, which would go a long way in arresting the gradual rise in prices. For the purpose the Tariff Board should include persons having technical knowledge of different industries. Such enquiries should be frequent so as to keep pace with the developments in various fields.

PLANNED MONEY:

A planned economy presupposes planned money. While we talk of planned economy and prepare paper plans, our monetary expansion is most unplanned, as has already been seen. And for what purpose? Not surely for economic expansion, but merely

for deficit financing. The inflationary gap was the result of the total expenditure undertaken by the Government of India on behalf of the British Government, being Rs. 1,740 crores till the end of 1945-46 plus budget deficit of Rs. 795 crores during 1939-40 and 1945-46 minus subscription to defence loans and small savings amounting to Rs. 1,236 crores. Hence the true inflationary gap was to the extent of about Rs. 1,299 crores, covered by the printing machinery of the Government. Inflation is sought to be justified in war time by the necessities of war; even in peacetime it can be justified if backed by proportionate increase in economic activity. But a blank inflation without the basis of economic activity simply raises prices and creates all sorts of social disaster. To-day many of the war-time items of expenditure have ceased; yet deficit financing continues and the inflationary gap which was Rs. 107 crores in 1946-47, Rs. 47 crores in 1947-48, has gone up to Rs. 124 crores in 1948-49. In addition, there is deficit financing in the provincial budgets. This inflationary development has resulted in a considerable decrease in the purchasing power of money. Some people have favoured a policy of controlled deflation. Deflation, however controlled, will land our economy in a state of perpetual depression. This should not be taken to mean that the continuance of the wartime price structure is favoured. Prices should be reduced, but not by a policy of controlled deflation. A more reasonable approach will be the adoption of an expansionist economic programme and thereby to absorb the money in the economic system itself. For this purpose it is better to create an improved psychological atmosphere. The first thing essential for the purpose is a strong and well-reasoned industrial policy on the part of the Government. If the spectre of nationalisation after five or ten years hangs over the industrialists, they cannot be expected to throw in their capital for productive uses. Besides, the easy money policy of the Government has gone too far and money is no longer forthcoming for investment. A halt should therefore be cried to the downward movement of interest rates. We have already suggested for the issue of the Employment Creation Bills. If the bills are of small denomination with, say, 3½ p.c. interest and provision for repayment after 15 or 20 years, they are expected to encourage small savings which in a vast country like India with a predominant middle class will divert

much money to productive uses which otherwise creates demand and inflates prices all the more. Administrative efficiency is also essential for speeding up economic activity, particularly in matters of the import of essential equipments and materials from abroad. It is true that even in other countries surplus materials are not so much available; but even to the extent to which they are available, they are not utilised. A. D. Shroff rightly voiced the grievance of the business community when he said sometime back that "it is a matter of common knowledge, particularly among the business and industrial community in India that decisions on applications for import licences have been unduly delayed by the Commerce Department with the result that the last portion of the sterling released in the previous period could not be utilised before 30th June." Another thing essential is the planning of our foreign trade on bilateral basis so that things exported from India bring in return essential commodities which may help our economic development. Action in this line is sure to speed up production and absorb the inflated currency in the economic system, thereby restoring its internal purchasing power, which it has lost to a considerable extent. A mere increase in the volume of money is no guide to the prosperity of the people. Had it been so, we ought to have been six or seven times more prosperous to-day than we were before the war.

EXCHANGE STABILISATION OR DEVALUATION:

The external value of our currency has been maintained by exchange control since the outbreak of the war. Before the war, since 1927, Indian opinion was all through in favour of the devaluation of the Indian Rupee. In view of the present rise in costs of production, a case may still be made for a proportionate devaluation of the Rupee, particularly so for improving our position in the overseas market. But if we consider the position from another standpoint, a clear, and even a stronger, case can be made for exchange stabilisation. What is more important for us is not so much the cultivation of foreign markets but the reorganisation of our national economy. Devaluation would stimulate foreign demand for Indian products and thereby stimulate the rising tendency of Indian prices. Hence our immediate policy in this respect should be exchange stabilisation. The

future of exchange rate of the Indian Rupee is to be decided according to the instructions of the International Monetary Fund and by the move that will be taken by important countries of the world. A policy of exchange stabilisation would not only help us in the home front but also would raise the prestige of the Rupee which will help us in making foreign borrowing, if essential, for financing the future plan of economic development. A well-balanced production drive will set in motion forces which will sooner or later remove the disequilibrium between the internal and external purchasing powers of the Rupee.

AN EXPANSIONIST ECONOMIC PROGRAMME:

What is needed for the Indian economy at present is an expansionist economic programme. Any move that hampers production is to be deprecated. In this respect the policy of the Government has certain weaknesses which we have already noted. It is true that the Government is faced with a two-fold problem of inflation and declining production. But any attempt at curbing the purchasing power of the masses would aggravate the problem. Rather production is to be stimulated and employment increased so that the volume of economic activity may adjust itself to monetary expansion. A right move by the Government would create the psychological atmosphere which is so very essential for converting the savings, both large and small, into investment. Time is an important factor to-day and for rapid economic expansion, a plan and a programme are essential along with the necessary organisation, staff, equipment and finances. Besides, there should be precision in data, discipline in action constant encouragement and drive and close adherence to the targets fixed. In all these respects there is much gap to be filled up. A mere talk of nationalisation, when nationalisation is not a practicable proposition, is simply causing harm. Rather the Government should give full attention to above matters in full co-operation with industry. If this is done, if administrative efficiency increases and if the Government is able to make its plan and programme effective, if every one of the wants and deficiencies of the economic life of this country receives proper attention in accordance to its urgency and importance, we shall be able to make this country a worthy home for human beings to live in.

APPENDIX

THE SCARCITY OF RAW MATERIALS IN COTTON AND JUTE INDUSTRIES:

In the first chapter we have argued that cotton and jute industries are self-supporting regarding the supply of raw material. When it was written, the talk of partition of India was considered fantastic even in the influential circles. Since then we have been passing through rapid and unprecedented changes and the one-time self-supporting industries are fast facing the problem of scarcity of raw material as a result of partition, and who knows some of them are fast approaching towards extinction. Hence a note on this scarcity and the problem created thereby will not be out of place. So far as cotton industry is concerned, the best cotton-growing tracts have gone over to Pakistan as a result of partition. Besides, the greatest beneficiary of research work conducted by the Indian Central Cotton Committee during the last twenty-five years has been Pakistan. The area under irrigated cotton in undivided India formed 28 p.c. of total area under cotton in 1946-47, as against 22 p.c. in 1938-39, the corresponding percentages for Indian Union and Pakistan being 7 and 96 in 1946-47. In Indian Union, improved varieties accounted for only 45 p.c. of its total acreage, whereas in Pakistan they accounted for as much as 89 p.c. The greatest sufferer as a result of Grow More Food Campaign at the expense of cotton acreage has been Indian Union. Thus out of a total reduction since 1938-39 of 86,30,000 acres in area under cotton in undivided India, Indian Union alone accounted for 8438,000 acres or 98 p.c. of total decrease. The exact area under cotton in 1946-47 in Indian Union and Pakistan were 11493000 and 3367000 acres. On the basis of total crop of 42 lakh bales for undivided India in 1946-47, output of Indian Union and Pakistan worked out at 26 lakh and 16 lakh bales. The details of distribution of this cotton according to staple length, its production and consumption in Indian mills is shown in Table LII. Attempts are being made to increase the cultivation of cotton in Indian union territory, which has already been noted.

It now remains to be seen how far these attempts are going to be successful.

Even more alarming than the prospect of the cotton textile industry has been the prospect of jute industry. The partition of India into two Dominions has split up the jute industry from the jute growing areas. In this way the manufacturing centres were cut off from their sources of raw material. Approximately 75 p.c. of the jute is grown in Pakistan whereas the bulk of the exports took place from West Bengal via Calcutta. Almost all jute mills are situated in and around Calcutta and even those mills which are outside Calcutta are still in the Indian Union. But practically the whole of the better quality jute is grown in Pakistan. In 1946-47 the total area under jute cultivation in Pakistan was 1358800 acres whereas in India it was 1880000 acres, being 72.3 and 27.7 per cent respectively. The yield of raw jute was estimated at 4076000 bales for Pakistan and 1474500 bales (now about 1700000 bales) for India. Of the latter, West Bengal produced about half a million bales whereas Nepal, Bihar, Assam and Orissa about one million bales as shown in Table LIII. Apparently, so far as jute growers and jute manufacturers are concerned, the dependence is a close one. But now it is becoming clear that of the two countries, India's position is weaker in view of the fact that even raw jute has a market in the world which Pakistan has started exploiting and that Pakistan is trying to develop her own industries, whereas India's dependence for the supply of raw jute is a material one. Pakistan has taken advantage of this situation and imposed a land tax on all raw jute passing over its border. The rates of the new tax were Rs. 15 per bale of 400 lbs. in case of pucca bales and Rs. 3 per md. for kutchha bales and loose jute. Over and above there were difficulties in remittances which had to pass through the Foreign Exchange Departments of the two Dominions. Subsequently the rate of duty has been raised to Rs. 20 and Pakistan has been unduly interfering with the normal law of supply and demand. In the last Budget Speech, Pakistan Finance Minister has warned India that if the latter did not give certain reliefs in respect of goods exported from India to Pakistan, he would impose an additional excise duty of Rs. 4 per bale on raw jute exported to India alone. How steep is the rate of this tax is clear from the fact that before the war raw jute itself was

selling at Rs. 39 per bale. Consequently, the index number of raw jute prices is substantially higher than that of jute manufactures, being 560 and 460 respectively. Thus on the one hand, many of the mills are reporting losses, a state of affairs under which they cannot struggle for long, and on the other, India is unable to enlarge its market for jute goods for which considerable demand exists and hence she cannot accumulate sufficient hard currency for which she stands so much in need. At the same time India has to spend about Rs. 100 crores in the neighbouring Dominion for the purchase of raw jute, a state of affairs which has made India's balance of payment with Pakistan unfavourable.

Since partition, the jute industry of India has been struggling for sufficient jute to keep the industry going and it is now doubted whether this will continue as a permanent feature and the mills will be called upon to pay this unduly high price of raw jute. Failure to secure adequate supplies of raw jute at reasonable prices would "mean the speedy ruin of the industry and a major disaster to the country."

If the industry is to survive and thrive it is essential to reduce this dependence. Even it is assumed that there is perfect harmony between the two dominions, the case for increasing jute production in India is in no way affected. During 1948-49 Pakistan promised to supply 50 lakh bales to India of which upto March 1949, 40 lakh bales had been purchased by the mills and of these 6 lakh bales were still to be delivered. Whatever that may be, on the basis of Rs. 200 to 210 per bale, India will have to pay 100 to 110 crores of rupees to Pakistan. This will adversely affect our balance of payments position with Pakistan, the more so because of the fact that since partition Pakistan has ceased to import sugar from Indian Union and reduced its purchase of cloth considerably. Consequently, already there is a move to increase the cultivation of jute in India so as to make itself progressively self-sufficient in regard to this commodity. Now, if India is to maintain her former position in the world market, she must produce about 70 lakh bales, of which at present she produces only 17 lakh bales. Under existing average yield of raw jute in the Indian Union territory, which varies between 1.78 bales per acre in Cooch Behar and 2.8 bales in some places in Assam, averaging slightly above 2 bales per acre, about 3.5 million acres of land

has to be brought under cultivation, whereas at present the area under jute cultivation is considerably below this figure, as shown in the following figures:—

Area under jute in Indian Union:—

1946-47	...	...	537000 acres	
1947-48	...	...	646000	„
1949-50	...	...	766000	„
1949-50	...	...	1048000	„ (Proposed by Indian Central Jute Committee).

If it is possible to expand acreage upto this figure, India will obtain about 30 lakh bales, i.e., 50 p.c. of her total requirement. Expansion of acreage under jute is in itself a problem, because this may affect the Govt's programme to be self-supporting as regards the supply of foodstuff by 1951. Under existing conditions, there is absolutely no scope for the conversion of land from food crops to commercial crops.

Hence if the supply of jute is to be increased in Indian Union territory, there are three ways of doing so, viz., (i) by increasing the yield per acre by the use of seeds of imported strains, (ii) by the application of correct fertilisers and (iii) by increasing the acreage. The yield can be increased partly by the use of seeds of improved strains and partly by better methods of cultivation and better controls over all that affects agricultural crops. These may increase the yield by about 20 to 25 p.c. If fertilisers are used in correct proportions, the yield will go up by at least 20 p.c. These two in themselves can raise the yield per acre to about 3 bales, very near to the present yield in Eastern Pakistan. Efforts should also be made to bring increasing acreage under the cultivation of jute, without, of course, adversely affecting the cultivation of food grains. A year ago the Indian Central Jute Committee stated that it will be possible to grow jute in the vast tracts of cultivable wastes and current fallows in West Bengal and Bihar. It also suggested the possibility of increasing jute acreage by practicing the system of double-cropping in suitable "Aman" paddy lands. According to Sir Datar Singh, the production of

jute in Union can be increased by nearly 20 lakh bales, by growing early varieties of jute as a second crop in these Aman paddy lands in West Bengal, Bihar and Orissa. There are about 10 million acres of such lands in the three districts and a considerable portion of this may be so converted. These suggestions are good enough; but it is not yet known as to what steps have been taken to make them effective. Time is an important factor in this respect. Already some mills are running at a loss and it has been decided recently to keep the mills closed for a week in the month in order to cope with the scarcity of raw materials. This will not only create labour trouble but also will result in diminished profits or even losses for many mills, a decline in revenue of the government and an adverse balance of payments. For all these reasons, it is essential that early steps should be taken to increase the supply of jute at an early date.

It will not be out of place to mention here that our paper industry is also affected on the score of raw material supply as a result of partition. As in jute industry, so also in paper industry, all paper mills have come under Indian Union, but some of the valuable forests which used to be the major source of supply of bamboos to certain mills, have gone to the other Dominion, with the result that the demand of all the mills has to be met from the remaining mills in the Indian Union. The increased demand on Indian forests is of the order of nearly 41000 tons of bamboo and grass a year. Certain other raw materials and chemicals useful in the industry, viz., rosin, salt, lime and rags, have also gone to Pakistan. The forest policy of the Indian Union should be so coordinated as to avoid depletion of our forest reserves and at the same time gap created in the supply of bamboo and grass may be covered.

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TABLES

TABLE I. SHOWING THE DISTRIBUTION OF MANUFACTURING COSTS IN COTTON TEXTILE INDUSTRY.

	Bombay	Ahmedabad	Kanpur	Delhi	Calcutta	Nagpur	Baroda
Number of Mills Considered	11	4	2	2	3	1	2
Items.	%	%	%	%	%	%	%
Labour	49.40	53.80	40.75	51.60	42.40	38.60	52.65
Fuel, Power	10.80	8.70	15.45	7.46	8.20	9.28	6.21
Water	0.60	0.53	0.14	0.04	—	0.46	—
Stores	13.40	18.50	17.30	24.34	18.50	13.61	17.70
Repairs & Maintenance	2.50	2.64	4.14	5.78	0.70	—	1.00
Supervision	7.50	8.10	11.60	Inclu- ded in labour	7.70	14.99	8.85
Insurance	0.90	0.90	1.56	0.67	1.60	2.38	1.33
Rents, Rates & Taxes	1.90	0.23	0.96	0.44	1.50	0.41	0.85
Packing	2.50	1.60	2.55	—	2.20	3.24	1.66
Selling Expenses	7.00	1.10	—	8.35	11.10	14.75	7.97
Other Expenses	3.50	3.90	5.55	1.32	6.10	2.28	1.77
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00

TABLE II. CLASSIFICATION OF COTTON ACCORDING TO TRADE DESCRIPTION.

Types of Cotton Cultivated	Staple length
Oomras	5/8" to 6/8"
Dholleras	5/8" to 7/8"
Bengals	3/8", 4/8", 5/8" and 7/8"
American	11/16" and 7/8"
Broach	5/8" to 1"
Coompta-Dharwars	6/8" to 1"
Westerns	In Bombay 5/8" to 6/8" and Madras 7/8"
Northerns	Madras—7/8"
Coconadas	5/8" to 7/8"
Tinnevellys	7/8"
Salems	(1) Uppams 6/8", (4 Karunganni 7/8" to 1" and (3) Nadams 5/8" to 6/8"
Cambodias	(1) Irrigated 7/8" to 1" and (2) unirrigated 7/8"
Comillas, Burmas and others	3/8" to 4/8" Comillas; 4/8" to 6/8" Burmas.

TABLE III. ESTIMATED PERCENTAGE OF PRODUCTION TO TOTAL YIELD.

Description of Cotton	1938-39	1939-40	1940-41	1941-42	1942-43	1943-44
Bengals	20.0	19.1	20.7	15.2	12.5	12.3
Americans	21.2	18.5	19.5	22.5	31.7	30.7
Oomras	21.5	26.3	25.2	25.5	20.0	20.4
Hyderabad-Gaorani	2.5	3.0	2.3	2.3	3.1	3.1
Central India	5.1	3.6	5.7	4.7	4.9	5.4
Broach	4.8	5.0		4.7	3.9	4.4
Surti	3.5	3.2	2.4	2.5	2.4	2.6
Dholleras	6.3	3.9	5.5	6.9	5.7	5.5
Southerns	9.6	10.2	7.8	7.9	6.4	7.6
Tinnevellies, Combodias, Salems and Comillas	5.4	7.2	7.2	7.8	9.4	8.0

TABLE IV. YIELD PER ACRE OF INDIAN COTTON BY VARIETIES (in lbs.)

Description of Cotton	1938-39	1939-40	1940-41	1941-42	1942-43	1943-44
Bengals	123	140	168	136	140	137
Americans.	173	150	175	192	191	175
Oomras.	64	83	92	93	72	74
Hyderabad-Yaorani	56	71	61	68	65	59
Central India	60	44	79	66	65	77
Broach	114	116	100	130	102	133
Surti	108	97	88	79	48	104
Dholleras.	59	50	64	76	79	83
Southerns	58	57	53	51	42	49
Tinnevellies	89	88	92	94	91	91
Cambodias.	124	156	170	161	178	183
Salems	31	36	42	52	84	67
Comillas.	138	141	133	117	122	119

TABLE V. ACREAGE, TOTAL YIELD AND YIELD PER ACRE OF COTTON IN AMERICA*

Year.	Acreage	Total yield in bales of 500 lbs.	Yield per acre in lbs. (approximate)
1938-39	24248	11944	204
1939-40	23805	11816	206
1940-41	23861	12565	263
1941-42	22236	10742	241
1942-43	22602	12820	283
1943-44	21652	11128	257

TABLE VI. SHOWING THE CONSUMPTION OF PUNJAB AND SIND COTTON IN INDIA. (In bales of 400 lbs.)

	1944-45	1945-46	1946-47
Punjab American :—			
(a) Medium Staple	329871	350280	331254
(b) Long Staple	549193	539691	474626
Buri (American Seed)	9661	8754	9103
Sind-American :—			
(a) Medium Staple	22532	31511	26231
(b) Long Staple	35141	340082	241803

* Source: New York Cotton Exchange Cotton Year Book.

TABLE VII. SHOWING THE ACREAGE UNDER COTTON CULTIVATION, TOTAL AMOUNT OF YIELD AND MILL CONSUMPTION OF COTTON IN INDIA.

Area	1937-38		1938-39		1939-40		1940-41		1941-42	
	Area	Yield	Area	Yield	Area	Yield	Area	Yield	Area	Yield
Bombay (Including Sind & Baroda)	8135	1883	7588	1635	6904	1489	7555	1622	7486	1681
C. P. and Central Indian States	5370	840	4794	716	4307	840	4706	1132	4876	1164
Madras & Hyderabad	6135	1075	5440	879	5410	958	5899	1081	5824	1100
Punjab & U. P.	4581	1713	4324	1587	3789	1441	3792	1769	4046	1734
Rest of India	1525	268	1336	259	1170	181	1334	299	1315	301
Total	25746	5779	23482	5076	21580	4909	23286	5903	23547	5980
Mill Consumption of Cotton (in bales)	2870		3122		3052		3359		3938	

(Figures for Yield in bales of 400 lbs. '000 omitted.)

TABLE VIII. SHOWING THE PROGRESS IN YARN PRODUCTION IN INDIA BY COUNTS.

Year Ending 31st March	Counts 1-10	Counts 11-20	Counts 21-30	Counts 31-40	Counts above 40
1918-19	87319699	314540680	189204470	19189215	4555242
1924-25	92795653	377014598	223812063	19367708	5822227
1928-29	78887734	303135800	213013236	37487974	10029271
1929-30	105463360	387918822	271824310	40365137	15278339
1930-31	113588158	400150519	259689569	60746714	27310831
1931-32	116899114	445157934	294005342	71073075	34001363
1934-35	109710003	463460247	282413512	96043918	43876496
1935-36	110713899	480206261	287744760	112339259	58528164
1936-37	111692937	476966877	268678211	123007542	61851698
1937-38	113671570	494273766	302812782	152455137	85112656

TABLE IX. PROGRESS OF JUTE INDUSTRY.

	Number of mills	Looms (000's)	Spindles (000's)
1879-1880 to 1883-4	21	5.5	88.0
1899-1900 to 1903-4	36	16.2	334.6
1909-10 to 1913-4	60	33.5	691.8
1914-15 to 1918-19	73	39.7	821.2
1919-20 to 1923-24	82	44.6	936.2
1924-25	90	50.4	1067.6
1930-31	100	61.8	1225.0
1931-32	103	61.4	1220.6
1932-33	99	60.5	1202.2
1933-34	99	59.5	1194.4
1934-35	100	61.3	1221.7
1935-36	104	63.7	1279.4
1937-38	105	66.7	1337.9
1938-39	107	67.9	1350.4
1947-	—	71.3	—

TABLE X. SHOWING ACREAGE UNDER SUGAR CANE AND AVERAGE YIELD PER ACRE.

Year	Total acreage under sugar cane (000' acres)	Acreage under improved varieties (000' acres)	Average cane Production per acre in tons
1930-31	2905	817	12.3
1931-32	3076	1170	14.1
1933-34	3422	2295	15.3
1935-36	4154	3056	15.3
1936-37	4582	3452	15.6
1940-41	4598	3480	15.0

TABLE XI. SHOWING THE COST OF CULTIVATION OF DESHI AND IMPROVED VARIETY OF SUGAR CANE.*

Items.	Desi Rs.	Cane As.	Improved Rs.	As.
Cost of Seed, Cultivation and Manuring	51	6	55	10
Irrigation	7	4	7	4
Rent	10	0	10	0
Total Cash Rs.....	68	10	72	14
Yield-in maunds	250	0	350	0
Value of Gur, 10 p.c. Recovery at Rs. 3 per md.	75	0	150	0
Profit Rupees	6	6	32	2

TABLE XII. SHOWING THE QUANTITY OF PULP PRODUCED AND IMPORTED. (In tons.)

Year.	Bamboo Pulp used	Grass pulp used	Pulp of other indigenous products used	Total	Imported Pulp used.
1931-32	5228	9049	3294	17571	20081
1932-33	5429	9632	2657	17718	21424
1933-34	6721	11377	3769	21867	20016
1934-35	9225	11340	2561	23126	19737
1935-36	14441	12280	3567	30288	16615
1936-37	19281	11510	4583	35374	10976

* Source: The Indian Sugar Industry—1942 annual.

TABLE XIII. THE ESTIMATED QUANTITIES OF
BAMBOO AVAILABLE.

Province or State.				Tons.
Bengal	...	...	...	100000
Assam	...	...	...	30900
Bihar	...	...	...	9000
Orissa	...	...	...	71425
Madras	...	...	...	68667
Bombay	...	...	...	155000
C. P.	...	...	...	27545
Hyderabad	...	...	...	25000
Travancore	...	...	...	25000
Mysore	...	...	...	100000
Total				612537

TABLE XIV. TOTAL PRODUCTION OF COAL IN INDIA.

Year	1935-36	1936-37	1937-38	1938-39
Total Production in million tons	20.87	20.06	23.479	24.8

TABLE XV. CONSUMPTION OF COAL IN INDIA.

Consumers.	Estimated Consumption in 1935 (Tons)	% Total
Railway	7259000	31.9
Admiralty & Royal Indian Marine	29000	0.1
Bunker Coal	1020000	4.5
Jute Mills	653000	2.9
Cotton Mills	1531000	6.7
Iron Industry including Engineering Work-shops	5583000	24.4
Port Trust	135000	0.6
Inland Steamers	551000	2.4
Brick, Kilns, Potteries, Cement Works, etc.	792000	3.5
Tea Gardens	186000	0.8
Paper Mills	171000	0.7
Collieries & Wastage	1220000	5.3
Other forms of industrial & domestic Consumption	3712000	16.2

(Source: *National Planning Committee Report on Power and Fuel.*)

TABLE XVI. TOTAL COAL RESERVES OF INDIA.

	Million tons.
1. Darjeeling & Eastern Himalayan Region ...	120
2. Giridih, Deogarh & Rajmahal Hills ...	250
3. Raniganj, Jharia, Bokaro & Karanpura Fields ...	25650
4. Son Valley—Auranga to Umaria & Sohaghur ...	10000
5. Chhattisgarh & Mahanadi (Talcher) ...	5000
6. Satpura Region—Mahpani to Kanhan and Pench Valley ...	1000
7. Wardha Godavari—Warora to Bedadanuru ...	18000
Grand Total ...	60000

(Dr. Fox's Estimate.)

TABLE XVII. RESERVES OF WORKABLE COAL IN INDIA.

	Million tons.
1. Darjeeling foot hills Lisu Ramthi Area ...	20
2. Giridih, Jainti & Rajmahal Hills ...	80
3. Raniganj, Jharia, Bokaro & Karanpura Fields ...	10150
4. Son Valley—Huttar to Umaria & Sohaghur ...	2000
5. Chhattisgarh & Mahanadi (Talcher) ...	1200
6. Satpura region—Mohpani to Kanahan & Pench ...	150
7. Wardha Godavari Warora to beyond Singareni ...	6400
Total ...	20000

(Dr. Fox's Estimate.)

TABLE XVIII. RESERVES OF GOOD QUALITY COAL, BOTH COKING AND NON-COKING.

(IN MILLIONS OF TONS.)

Coal Fields.	Coking Coal of Superior Quality.		Non-coking Coal of Superior Quality.		Total
	0-1000 ft.	1000-2000 ft.	0-1000 ft.	1000-2000 ft.	
Giridih ...	38	—	—	—	38
Raniganj ...	73	168	953	607	1801
Jharia ...	737	163	298	52	1250
Bokaro ...	270	245	7	—	522
Total ...	1118	576	1258	659	
	1694		1917		3611
Karanpura ...	.....	.....	550		
Hutar, Johilla, Burhar ...	.....	.....	50		
Kurasia, Jhilmilli, etc. ...	.....	.....	30		
Talcher to Korba ...	.....	.....	200		
Kanhan-Pench ...	.....	.....	30		
Ballarpur ...	.....	.....	50		
Total ...			910		910
Grand Total ...	...	...	...	...	4521

(Estimate by Dr. L. L. Fermor.)

TABLE XIX.

TABLE XIX. MOTIVE POWER, UNITS GENERATED AND WORKING COST PER UNIT OF ELECTRICITY

Total Working Cost per unit Generated.									
Station.	Motive Power	Units Generated	Fuel in annas	Oil Waste, Water, Engine room Stores.	Wages & Salaries excluding management.	Repairs & Maintenance.	Rents, Rates & Fares.	Management, Directors' Fees, Salaries, Office & Legal Expenses.	Total.
Calcutta Electric Supply Corp.	... Steam	280.6	.090	.002	.057	.085	.014	.164	.412
Karachi	... Oil	6.2	.269	.44	.167	.422	.030	1.213	2.145
Lahore	... Steam	13.0	.277	.007	.073	.217	.008	.216	.798
Cawnpore	... Steam	88.3	.125	.002	.014	.050	.002	.07	.270
Tata Hydro-Electric	... Water	163.4	—	.011	.043	.005	.010	.264	.333
Andhra Valley	... Water	159.9	—	.005	.038	.007	.009	.383	.441
Tata Power Co.	... Water	161.8	—	.005	.040	.001	.013	.424	.483
Shivasamudram	... —	—	—	—	—	—	—	—	.164 as.

(Source: N. P. C. Report on Power and Fuel.)

TABLE XX. SHOWING THE IMPORT OF PASTE BOARD, MILL BOARD AND CARD BOARD.

Year.	Quantity Cwt.	Value Rs.
1931-32	275543	2600399
1932-33	419543	3714212
1933-34	317042	2772684
1934-35	416954	3338714
1935-36	496926	3656434
1936-37	485009	3540428

TABLE XXI. SHOWING THE IMPORT OF MACHINERY AND MILL WORK IN INDIA.

Countries.	Pre-1914 average.	1914-18 average.	Post war average	1939-40
U. K. ...	49769	42036	176027	89255
U. S. A. ...	2456	6681	31076	24933
Japan ...	63	1347	601	1895
Italy ...	144	237	427	1887
Germany ...	3027	249	3888	13765
Other Countries ...	655	837	4465	14960
Total ...	51114	51387	216484	146695

CHART SHOWING FUNCTIONAL ORGANISATION

BOARD OF DIRECTORS.

MANAGING DIRECTOR
(OR GENERAL MANAGER)

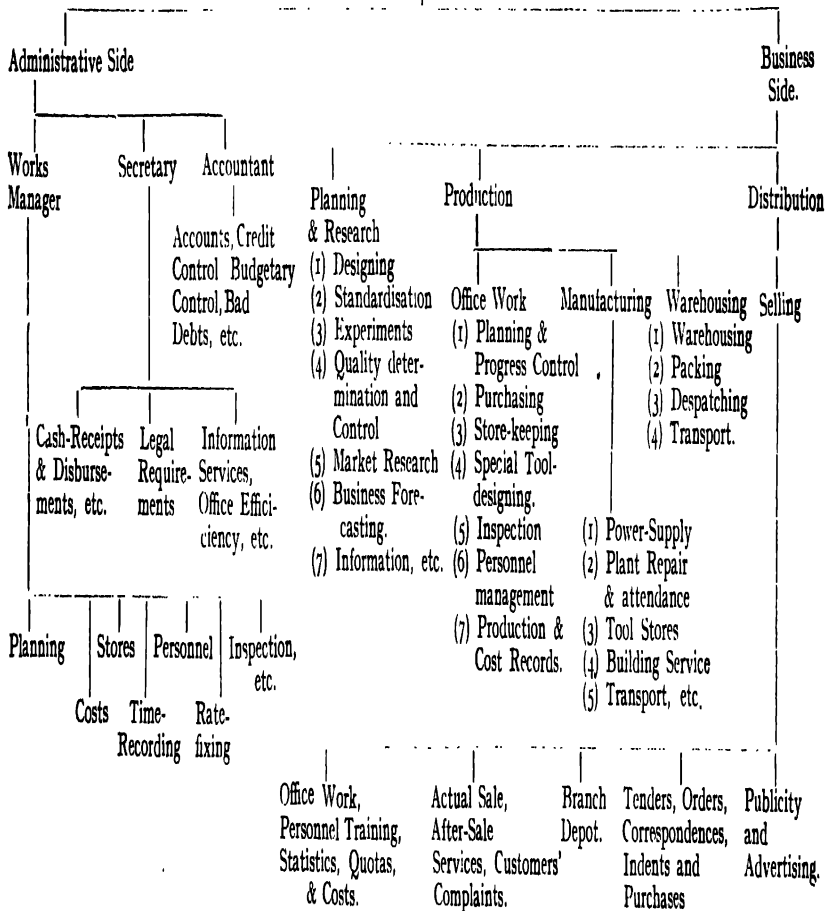


TABLE XXII. (A) COTTON TEXTILE MILLS IN INDIA IN 1940 CLASSIFIED ACCORDING TO THE NUMBER OF SPINDLES INSTALLED, EXCLUDING MILLS WHICH HAVE STOPPED WORKING OR ARE RECENTLY REGISTERED OR ARE IN COURSE OF ERECTION:

Number of Spindles.	Bombay Island	Ahmedabad	Rest of Bombay Presy, incl. Sind.	Madras.	U. P.	C. P. Berar Hyderabad.	Rajputana & Central India.	Bengal.	Rest of India.	Total.
	1	2	3	4	5	6	7	8	9	10
Less than 15,000 ...	2	8	18	28	5	3	5	8	8	85
15,000 & less than 30,000 ...	9	39	26	15	8	10	11	8	6	132
30,000 & less than 45,000 ...	22	17	2	4	2	2	4	3	5	61
45,000 & less than 60,000 ...	13	3	6	1	3	1	1	2	1	31
60,000 & less than 80,000 ...	8	1	1	1	1	—	—	—	1	13
80,000 & less than 1,00,000 ...	4	—	—	—	2	—	—	—	—	6
Over 1,00,000 ...	1	—	1	3	—	1	—	—	—	6

(B) COTTON TEXTILE MILLS IN INDIA IN 1940 ACCORDING LOOMS INSTALLED:

Looms.	1	2	3	4	5	6	7	8	9	10
Less than 500 ...	4	20	31	13	6	12	11	14	11	122
500 & less than 1,000 ...	24	37	15	1	4	4	6	7	7	105
1,000 & less than 1,500 ...	17	7	5	—	3	—	4	—	1	37
Above 1,500 ...	12	2	1	1	2	1	—	1	1	21

(C) AVERAGE NUMBER OF HANDS EMPLOYED DAILY IN COTTON MILLS (1940).

Hands Employed ...	1	2	3	4	5	6	7	8	9	10
Less than 1,000 ...	10	32	35	42	13	3	7	17	12	171
1,000 & less than 2,000 ...	33	35	14	6	4	12	7	6	6	123
2,000 & less than 3,000 ...	13	1	4	1	5	1	2	1	3	31
3,000 & less than 4,000 ...	3	1	2	—	—	—	3	1	1	11
4,000 & over ...	1	—	1	3	—	1	—	—	1	7

(D) QUANTITY OF COTTON CONSUMED IN COTTON MILLS (1940)

Approximate quantity of cotton consumed during the year in can- dies of 784 lb. ...	1	2	3	4	5	6	7	8	9	10
	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000	10,000
1,000	—	1	4	3	—	1	1	5	3	18
2,000	2	11	4	9	1	—	—	2	1	30
3,000	6	14	10	13	2	—	—	3	1	49
4,000	9	16	13	5	3	3	2	2	—	53
5,000	6	11	9	2	1	3	3	2	2	39
6,000	5	6	2	6	2	3	1	—	1	26
7,000	9	2	2	2	1	1	—	—	1	18
8,000	3	2	1	2	1	1	—	1	1	12
9,000	5	—	2	3	—	2	2	1	3	18
10,000	4	1	2	—	2	1	2	1	2	15
Over 10,000	9	3	2	4	7	2	7	1	2	37

TABLE XXIII. JUTE MILLS IN INDIA ACCORDING TO LOOMS
INSTALLED AND DIVIDEND DECLARED.

Number of Looms.	1938		1942	
	No. of mills.	How many declared dividend	No. of mills.	How many declared dividend
Less than 500	...	13	3	10
500—999	...	26	19	28
1,000—1,499	...	12	6	12
1,500—1,999	...	5	5	5
above 2,000	...	2	1	2

TABLE XXIV. NUMBER OF COMPANIES AND THEIR PAID-UP CAPITAL IN BENGAL AND BOMBAY.

(Paid-up Capital in lakhs of rupees)										
Year	All-India		Bengal		Bombay		Per-centage of 3 to 1	Per-centage of 5 to 1	Per-centage of 4 to 2	Per-centage of 6 to 2
	1	2	3	4	5	6				
	No. of Cos.	Paid-up Capital	No. of Cos.	Paid-up Capital	No. of Cos.	Paid-up Capital				
1920-1	4,708	16,446	2,148	7,290	872	5,883	45.6	18.5	44.3	37.7
1933-4	9,434	30,080	4,680	13,320	1,182	9,652	49.6	12.5	44.2	32.1

TABLES

(Source: B. C. Ghosh. *A Study of the Indian Money Market*).

TABLE XXV. SHOWING THE TENDENCY IN AVERAGE PAID-UP CAPITAL.

(a) All-India, Bengal and Bombay Figures.

Year	All-India	Bengal	Bombay
1920-21	3.5	3.3	6.7
1925-26	5.2	4.3	12.6
1930-31	3.7	3.0	11.3
1933-34	3.2	2.8	8.2

(b) All-India Figures (including Native States)

Year	No. of Cos.	Paid-up Capital	Average Paid-up Capital of a Company
		('000 omitted)	('000,000 omitted)
1939	11,114	29,03,919	2.61
1940	11,372	30,36,750	2.67
1941	11,617	30,27,707	2.60
1942	12,176	31,54,562	2.59
1943	12,993	31,30,109	2.40
1944	13,921	30,90,104	2.53

(Source: B. C. Ghosh. *A Study of the Indian Money Market*).

TABLE XXVI. SHOWING EFFICIENCY MEASURES ADOPTED BY THE SASSOON AND FINLAY GROUPS AND KOHINOOR MILLS.

I. Spinning Department:

Mixing Room—1 man to look after 2 hopper feeders.
 Blow Room—1 man to look after 2 scutchers.
 Card Room—1 man to mind 16 to 18 cards.
 Drawing Frames—2 man to look after 3 heads.
 Roving Frames—1 man to look after 2 roving frames.
 Ring Frames—1 man to look after 2 sides.
 Doffers & Tarwalas—1 man to look after 450 spindles.
 on coarse counts and 600 spindles
 on fine counts.

II. Weaving Department:

Winding (Grey)—No change except for adjustments in speed spindles per operative.

Warping—Two frames per warper with extra creelers where necessary.

Sizing—One man per machine with extra Taper's labourers where necessary.

Beaming—No change except institution of wire healds with adjusted drawing rates.

Weaving—Four looms to a weaver with certain facilities, also six to a weaver with certain facilities and adjustment of hours. Also changes in jobbers' section with smash hands and beam gaiters.

(Source: *Mr. Stone's Evidence before Bombay Textile Labour Enquiry Committee*).

TABLE XXVII. NUMBER OF WORKERS EMPLOYED ON CERTAIN EFFICIENCY SYSTEMS IN COTTON MILLS IN AHMEDABAD.

Type of Efficiency System.	Aug. 1934	Aug. 1935	Dec. 1936	July 1937	Mar. 1938	Mar. 1939
Two Hopper Feeder per man ...	7	5	5	6	6	6
Two Scutchers per man	6	3	5	5	5	11
2 men per 3 heads in Drawing ...	31	30	46	47	48	43
2 Roving Frames per man ...	31	52	63	76	74	97
2 Ring Spinning Sides per man ...	792	1239	1514	1662	1841	2002
Three looms per Weaver ...	nil	nil	nil	nil	nil	nil
Four looms per Weaver ...	32	nil	76	116	100	nil
Six looms per Weaver	nil	nil	nil	nil	nil	nil

(Source: *Bombay Textile Labour Enquiry Committee Report*.)

TABLE XXVIII. COMPARATIVE STUDY OF SPINDLES MINDED PER HEAD.

Machine.	No. of Machines			Total Spindles			Operatives.	Spindles per Tenter			Spindles per Doffer			Spindles per Tenter and Doffer		
	America	England	Ahmedabad	America	England	Ahmedabad	America	England	Ahmedabad	America	England	Ahmedabad	America	England	Ahmedabad	
Slubbing	5	4	5	500	400	400	5 Tenters 2 No Doffers	125	100	80	No Doffer	No Doffer	133.3	No Doffer	No Doffer	50
Roving	21	26	20	3360	4680	3600	7 Tenters 1 Doffer	480	360	360	3360	780	360	420	246.3	180
Ring	91	58	58	24636	26448	22040	18 Tenters 5 Doffers	1368.6	912	38	4927	1653	667.8	1071	587.7	242

Source: *National Planning Committee Report on Manufacturing Industries*

TABLE XXIX. EXTENT OF MECHANISATION IN COAL MINING.

1 Number of Collieries raising coal by:	2 In Raniganj		3 In Jharia		4 Total of Columns 2 and 3		5 Percentage of Total Number in each case	
	1919	1935	1919	1935	1919	1935	1919	1935
(a) Hand labour only or mainly hand labour.	98	38	153	38	251	76	42.76	19.74
(b) Steam Power only or mainly Steam Power. ...	160	135	165	150	325	285	55.37	74.03
(c) Electric Power only or mainly Electric Power ...	3	10	8	14	11	24	1.87	6.23

Of total number of 587

Of total number of 385

TABLES

TABLE XXX. SHOWING THE STRUCTURE OF WORKING CLASS FAMILY IN INDIA.

Location & Industry	No. of Families	Persons Living the Family.				Dependents living away from family	Total
		Men	Women	Children	Total		
Bombay (1921-22) all Industries ...	2,473	1.10	1.10	2.00	4.20	0.60	4.80
Sholapur (1925) Textiles	902	1.60	1.54	1.43	4.57	0.11	4.68
Ahmedabad (1926) Textile and manual ...	872	1.36	1.21	1.30	3.87	0.13	4.00
Bombay (1930) Textile	85	1.35	1.25	0.98	3.58	0.88	5.46
Madras, Textile ...	79	1.86	1.73	2.23	5.82	0.06	5.88
Coimbatore, Textile ..	96	1.36	1.48	2.05	4.89	0.25	5.14
Cawnpore Textile, Engineering and Leather ...	729	1.30	0.90	1.20	3.40	1.08	4.48
Nagpur Textile and others ...	102	1.41	1.41	1.72	4.54	0.17	4.71
U. P. Railways ...	253	1.28	1.30	1.75	4.33	0.91	5.24
Bihar & Orissa Rys. ...	213	1.23	1.43	2.18	4.84	0.69	5.53
Bengal Rys. ..	156	1.16	1.11	1.51	3.78	0.53	5.31
South Indian Rys. ...	283	1.36	1.73	2.69	5.78	—	5.78

TABLE XXXI. PERCENTAGE OF INDUSTRIAL POPULATION IN INDIA.

Province or State	Percentage of Population in 1921	Percentage of Industrial Workers in 1921	(P) (P)	Percentage of Population in 1941	Percentage of Industrial Workers in 1939	(P) (P)
Madras	(P) 13.1	(I) 8.4	0.64	(P) 12.7	(I) 9.7	0.76
Bombay	6.3	25.3	4.01	5.4	23.0	4.26
Sind	—	—	—	1.2	1.2	1.00
Bengal	15.3	35.1	2.29	15.5	28.7	1.85
U. P.	14.5	6.3	0.42	14.1	8.0	0.57
Punjab	6.8	3.2	0.47	7.3	3.9	0.53
Bihar	11.9	5.7	0.48	9.4	4.8	0.51
Orissa	—	—	—	2.2	0.3	0.14
C. P. and Berar	4.5	4.7	1.04	4.3	3.1	0.72
Assam	2.4	0.4	0.17	2.6	0.4	0.15
N. W. F. P.	0.7	0.06	0.08	0.8	0.06	0.08
Baluchistan	0.1	0.2	2.00	0.1	0.1	1.00
Ajmer-Merwara	0.1	1.0	10.00	0.1	0.7	7.00
Delhi	0.2	0.6	3.00	0.2	0.9	4.50
Total British India	76.4	91.1	1.19	76.0	84.9	1.12
Total Indian States	23.6	8.9	0.37	24.0	15.1	0.63
Grand Total	100.0	100.0	—	100.0	100.0	—

(Source : *The Location of Industry in India, Govt. of India.*)

TABLE XXXII. DISTRIBUTION OF INDUSTRIAL POPULATION
IN DIFFERENT INDUSTRIES.

Industries	Number of Workers	
	1921	1939
Cotton Spinning and Weaving	3,52,505	5,90,296
Jute	2,86,911	3,02,285
Silk	1,979	10,099
Woollen .. ..	.....	17,201
Woollen Carpet and Shawl Weaving ... ..	.....	3,382
Iron and Steel	25,776	43,731
General Engineering ... ..	.....	{ General Engineering 50,402 Foundries 6,428
Sugar	13,376	
Match	379	16,220
Paper	5,952	12,410
Leather ... ..	... ..	9,457
Chemical	2,392	7,968
Glass	4,361	10,151
Soap	1,005	2,227
Cement	5,090	10,758

/ TABLE XXXIII SHOWING WARTIME CHANGES IN WEEKLY
EARNINGS IN SOME MANUFACTURING INDUSTRIES.
(1939 AND 1945)

Industry	1939	1945	Percentage increase in wages
	(Rs.)	(Rs.)	
Wood, stone and glass	3.73	7.95	113
Chemicals and dyes	4.71	8.56	82
Engineering	5.06	12.44	148
Miscellaneous	5.41	9.68	79
Hides and Skins	5.49	10.32	88
Textile	5.64	11.8	109
Paper and Printing	6.40	10.88	70
Ordinance	6.96	12.23	76
Mints	7.07	12.71	80
Minerals and metals	8.91	11.58	29

(Source: *Indian Labour Gazette*)

TABLE XXXIV. SHOWING THE STRUCTURE OF FAMILY IN BOMBAY (B) AND AHMEDABAD (A).

Classification of Families as natural Families and Joint Households in different Income Ranges.						
Income Groups	Number of Natural Families		Number of Jt. Households		Total Families	
	B	A	B	A	B	A
Below Rs. 30	135	149	45	59	180	208
Rs. 30 and below Rs. 40	224	219	73	90	297	309
Rs. 40 " " Rs. 50	264	194	121	108	385	302
Rs. 50 " " Rs. 60	131	84	108	92	239	176
Rs. 60 " " Rs. 70	83	31	64	55	147	86
Rs. 70 " " Rs. 80	34	18	43	53	77	71
Rs. 80 " " Rs. 90	13	7	47	42	60	49
Rs. 90 and over	26	10	58	42	84	52
All Incomes	910	739	559	554	1,469	1,293

TABLE XXXV. SHOWING THE AVERAGE NUMBER OF PERSONS IN THE FAMILY.

Income Groups	Average number of Persons in Family.								Dependents away from Family		Total	
	Men		Women		Children		Total					
	B	A	B	A	B	A	B	A	B	A	B	A
Below Rs. 30	1.04	1.12	1.10	1.13	1.01	1.12	3.15	3.37	0.20	0.14	3.35	3.51
Rs. 30 and below Rs. 40	1.14	1.19	1.14	1.17	0.92	1.23	3.20	3.59	0.34	0.26	3.54	3.85
Rs. 40 " " Rs. 50	1.20	1.31	1.19	1.19	1.11	1.37	3.50	3.87	0.36	0.31	4.06	4.18
Rs. 50 " " Rs. 60	1.38	1.53	1.29	1.36	1.11	1.49	3.78	4.38	0.78	0.38	4.56	4.78
Rs. 60 " " Rs. 70	1.50	1.75	1.33	1.45	1.52	1.66	4.35	4.86	0.82	0.31	5.17	5.17
Rs. 70 " " Rs. 80	1.62	2.14	1.48	1.49	1.27	1.71	4.37	5.34	0.95	0.59	5.32	5.93
Rs. 80 " " Rs. 90	2.02	2.27	1.75	1.63	1.15	1.47	4.92	5.37	1.18	0.55	6.10	5.92
Rs. 90 and over	2.02	2.35	1.49	1.71	1.14	1.73	4.65	5.79	1.78	0.81	6.39	6.60
All Incomes	1.33	1.43	1.26	1.26	1.11	1.36	3.70	4.05	0.65	0.32	4.35	4.37

TABLE XXXVI. SHOWING FAMILY BUDGETS OF INDUSTRIAL WORKERS IN INDIA.

Percentage Expenditure on Main Consumption Groups.														INDUSTRIAL EFFICIENCY IN INDIA				
Locality and Industry	Number of Budgets	Average monthly Income	Average monthly Expenditure	Food	Clothing	Rent	Fuel and Lighting	Household requisites	Misc.	Balance								
											Rs. A. P.					Rs. A. P.		
											Rs.	A.	P.			Rs.	A.	P.
Bombay (1921-22) All Industries ...	2,473	52	4	6	47	14	5	52.32	8	40	7.67	7.29	2.26	18.06	4	6	1	
Sholapur (1925) Textile ...	902	39	14	10	37	13	11	52.76	12	70	6.72	10.28	1.08	16.46	2	0	11	
Ahmedabad (1926) Textile and Manual ...	872	44	7	2	39	5	8	57.90	9	45	11.74	7.04	1.16	12.71	5	1	6	
Bombay (1930) Textile ...	85	55	0	9	51	9	4	57.11	7	33	10.58	7.12	3.14	14.72	3	7	5	
Calcutta Textile ...	125	34	7	0	32	1	6	64.9	7	50	4.74	7.13	1.72	14.01	1	5	6	
Madras Textile ...	79	33	12	3	32	9	7	60.71	3	84	8.29	7.54	0.29	19.33	1	2	8	
Coimbatore Textile ...	96	28	3	2	33	0	3	57.70	6	21	5.05	6.81	0.44	23.79	4	13	1*	
Cawnpore Textile, Engineering and Leather Works	729	25	8	6	24	14	10	48.12	7	44	8.76	6.02	1.75	27.91	0	9	8	
Nagpur Textile and others	102	29	8	0	33	8	0	58.13	8	32	2.15	7.99	1.56	21.85	1	0	0*	
U. P. Rys. ...	253	22	0	0	.....			57.30	8	80	4.80	6.10	2.10	20.90	.....		
Bihar and Orissa Rys. ...	213	24	0	0	.....			59.10	6	80	1.80	4.40	1.80	20.10	.....		
Bengal Rys. ...	156	27	2	4	.....			52.70	5	70	4.60	4.40	1.40	31.20	.....		

* Deficit.

TABLE XXXVII. SHOWING FAMILY BUDGETS OF INDUSTRIAL WORKERS IN BOMBAY.

Natural Families. Households. All Budgets. Expenditure on main Consumption groups.																						
Income Groups	Income		Expenditure		Income		Expenditure		Income		Expenditure		Food.	Fuel and Lighting	Clothing etc.	Bedding & Household necessities.	Rent.	Misc.	No. of Families Studied	No. of Families in Debt.	% of Families in debt.	Average Indebtedness per family for families in debt.
	RS.A.P.	RS.A.P.	RS.A.P.	RS.A.P.	RS.A.P.	RS.A.P.	RS.A.P.	RS.A.P.	RS.A.P.	RS.A.P.	RS.A.P.	RS.A.P.										
Below Rs. 30	25-4-1	27-4-6	25-2-6	28-8-11	25-3-8	27-9-7	12-9-5	2-4-7	2-6-6	0-0-6	4-9-3	5-11-4	180	147	81.67	122-1-10						
Rs. 30 and below Rs. 40	34-5-6	34-2-11	33-12-2	36-6-1	34-3-3	34-11-7	16-0-3	2-9-8	2-13-5	0-0-9	5-4-7	7-14-11	297	223	75.08	136-6-6						
Rs. 40 and below Rs. 50	43-0-6	40-10-1	43-12-8	43-9-9	43-4-3	41-9-1	19-6-5	3-0-2	3-3-7	0-0-6	5-7-11	10-6-6	385	287	74.54	153-1-1						
Rs. 50 and below Rs. 60	53-3-6	47-5-5	53-3-4	49-21-10	53-3-5	48-6-9	22-15-9	3-7-5	3-12-2	0-0-11	5-15-11	12-2-7	239	175	73.22	173-0-8						
Rs. 60 and below Rs. 70	63-1-7	55-3-11	63-1-11	56-14-4	63-1-8	55-15-5	26-9-5	3-14-3	4-5-2	0-0-11	6-9-4	14-8-4	147	103	70.07	216-6-6						
Rs. 70 and below Rs. 80	72-7-9	61-5-10	73-12-5	62-15-9	73-3-4	62-4-3	29-7-3	4-2-7	4-10-8	0-1-7	6-14-4	16-15-10	77	59	76.62	283-12-6						
Rs. 80 and below Rs. 90	82-9-10	71-11-7	83-1-4	69-14-8	82-15-8	70-4-11	32-12-3	4-9-2	5-8-2	0-1-5	7-8-9	19-13-2	60	46	76.67	281-4-10						
Rs. 90 and over	119-7-3	93-13-8	112-6-5	86-7-4	119-9-4	88-12-0	39-14-6	5-8-7	5-13-6	0-4-9	9-0-4	28-2-4	84	58	69.05	295-5-0						
1098 All Incomes	45-6-5	42-1-7	57-11-10	52-4-11	50-1-7	45-15-9	21-6-10	3-4-4	3-9-0	0-1-0	5-14-3	11-12-4	1469	74.94	174-9-2							

TABLE XXXVIII. SHOWING THE NUMBER OF WORKING CLASS FAMILY FROM DIFFERENT PROVINCES IN VARIOUS INCOME-GROUPS AT JAMSHEDPUR.

Province or State	Less than Rs. 10	Rs. 10-15	Rs. 15-20	Rs. 20-30	Rs. 30-40	Rs. 40-50	Rs. 50 & over	Total	Average Income Rs. As. P.
N.W.F.P.	—	—	—	1	5	3	1	10	38-6-4
Punjab	1	1	5	15	26	22	9	79	36-11-5
U. P.	—	6	6	14	27	24	20	97	37-6-11
C. P.	1	19	25	48	25	22	9	149	28-2-5
Madras	—	7	7	28	23	19	14	98	34-1-4
Bihar	18	34	47	50	64	48	19	280	27-3-5
Bihar States	5	8	10	16	5	1	2	47	23-1-7

TABLE XXXIX. LOSS OF WORKING DAYS IN INDUSTRIAL STRIKE (1921-41).

Industries	Number of Disputes	Number of Workers Involved	Number of Days Lost.
Textile Industry ...	1948	2932595	83614068
Jute mills ...	513	2077826	21429962
Engineering Workshops			
Railways, including Ry Workshops ...	247	191027	5777539
Mines ...	125	396747	9761188
Miscellaneous	82	100561	1660038
	1749	975402	12957526
Total ...	4664	6674158	135200321

Source: *Mukherjee The Indian Working Class.*)

TABLE XL. TRENDS IN INDUSTRIAL STRIFE OVER TWO DECADES.

Year	Number of Disputes	Number of people involved	Number of Working days lost
1921	396	600351	6984426
1922	278	435434	3972727
1923	213	301044	5051704
1924	133	312462	8730918
1928	203	506851	31647404
1929	141	531059	12165691
1936	157	169029	2358062
1937	379	647801	8982257
1938	399	401075	9198708
1939	406	409189	4992795
1940	322	452539	7577281
1941	359	291054	3330503
1942	964	772653	5799965
1943	716	525088	2342287
1945	—	—	4050000
1947 (up to Nov.)	—	—	15300000

TABLE XLI. STATISTICS OF WORKMEN'S COMPENSATION,
1724-1942.

	Total Number of Cases	Total Com- pensation Paid (Rs.)	Year	Total Num- ber of cases	Total Com- pensation Paid (Rs.)
1924			1933	14559	813949
(July-Dec.)	4168	150224	1934	16890	868847
1925	11371	644120	1935	22999	1161465
1926	14096	821476	1936	28510	1464180
1927	15216	1111254	1937	29645	1288764
1928	16768	1095730	1938	35065	1432723
1929	18865	1260164	1939	38681	1509327
1930	23574	1246764	1940	41015	1938476
1931	17480	1066356	1941	39045	1584293
1932	14261	823145	1942	44443	1869359

TABLE XLII. SUBSTANCE OF PROVINCIAL LEGISLATION FOR
MATERNITY BENEFIT.

Provinces.	Qualifying Periods (months)	Maximum Period for maternity Benefit (weeks.)	Rate of Maternity Benefit.
Bombay.	9	8	8 annas a day or average daily wages, whichever is less. But in the cities of Bombay and Ahmedabad, 8 annas a day.
C. P. & Berar.	9	8	8 annas a day or average daily wages whichever is less.
Madras.	240 days (8 months) within a period of one year	7	8 annas a day.
U. P.	6	8	8 annas a day or average daily wages whichever is greater.
Bengal.	9	8	Do.
Punjab	9	60 days	12 annas a day.
Mines (under the Indian Mines Maternity Benefit Act).	6	8	8 annas a day.
Assam.	150 days	8	(1) In plantation, Re. 1 per week for the period before confinement and Rs. 1-4 per week for the period after confinement, provided the total cash payment is Rs. 14. (2) In other employments, Rs. 2 per week or average weekly wage or salary whichever is greater.

TABLE XLIII. EXPANTION OF VOCATIONAL EDUCATION IN INDIA.

Types of Institutions			Number of Institutions	Number of Students
I. Colleges:				
Training	...	...	36	2,365
Law	...	...	15	6,618
Medical	...	...	18	6,834
Engineering	...	...	7	2,769
Agricultural	...	...	9	2,125
Commercial	...	...	15	10,094
Technological*	...	...	2	406
Forest*	...	...	2	55
Veterinary*	...	...	4	767
Total			108	32,044
II. Schools:				
Normal and Training	...	...	571	27,501
Medical	...	...	33	5,216
Engineering, Technical and Industrial	...	...	633	31,467
Commercial	...	...	305	13,627
Agricultural*	...	...	18	849
Art	...	...	18	1,570
Total			1,578	80,230
Grand Total			1,686	1,12,263

TABLE XLIV. SHOWING THE PROVISION OF HOUSING FOR LABOUR IN BOMBAY AND AHMEDABAD.

Centre	Number of Employers providing Housing	Total number of Tenements	Single Room	Double Room	Three Rooms and over
Bombay ...	1	4,301	3,354	939	8
Ahmedabad ...	28	2,749	2,282	467	—

* Figures not up-to-date.

TABLE XLV. NUMBER OF UNITS IN DIFFERENT PROFIT-GROUPS.

(PROFIT = DECLARED DIVIDEND)

Industry	Average for the years*	No. Profit	Below 5 p.c.	5 p.c. & below 10 p.c.	10 and below 15 p.c.	15 and below 20 p.c.	20 and below 25 p.c.	25 p.c. and above
Engineering	1937-38	17	14	17	11	6	3	4
Cotton	1938-39	21	22	8	7	3	1	—
Jute	1933-37	3	5	8	6	1	4	—
Sugar	1936-38	8	2	5	3	2	3	—

TABLE XLVI. SHOWING CAPITAL, PROFIT, GROSS PROFIT AND PROFIT PER UNIT OF CAPITAL

(Figures approximate)
(In lakhs of Rupees)

Industry	Number of Units	Capital	Year†	Profit	Gross Profit	Profit per Unit of Capital
Engineering ...	71 1937	2,232(1)		99.5	198.7(7)	.04
Cotton ...	61 1938	1,825(2)		80.5(5)	17.5(8)	.44
Jute ...	28 1936	569(3)		53.3	250.8	.09
Sugar ...	27 1938	2,456(4)		262.7(6)	463.5(9)	.10

TABLE XLVII. EXTENT OF ECONOMIC PROGRESS.

Country	Primary Occupations (Agriculture, Forestry and Fishing)	Secondary Occupations (Mining and Building Industries)	Tertiary Occupations (Commerce, Transport & Services)
U.S.A. ...	19.3	31.1	49.6
Canada ...	34.5	23.2	42.3
Britain ...	6.4	43.9	49.7
Germany ...	24.3	38.5	37.2
Japan ...	50.3	19.5	30.2
India ...	62.4	14.4	23.2

(Source: *Cohn Clark—The Conditions of Economic Progress.*)

* Where figure for the years mentioned is not available, figure for some nearby year has been taken into consideration.

† Where figure for the year mentioned is not available, figure for some nearby year is taken into consideration.

(1), (2), (3) and (4) include debenture-capital for some concerns.

(5) Profits include debenture interest for 17 units.

(6) Profits for one concern include Debt Redemption Fund and for three Dividend Adjustment Account.

(7), (8) and (9) Profit shown after adjustment i.e., after transferring from Reserve or Dividend Equalisation Fund or after deducting loss for some concerns.

TABLE XLVIII. PREWAR CONSUMPTION, PRESENT PRODUCTIVE CAPACITY AND TARGETS OF PRODUCTION FIXED BY THE PANEL FOR GLASSWARE.

In Tons.

	Prewar Consumption	Present Capacity	Target
Bangles	15,000	18,000	19,800
Beads and False Pearls	4,200	120	4,200
Bottles and Phials ...	80,000	1,00,000	1,00,000
Lampware ...	9,500	10,000	14,000
Tableware ...	5,000	5,000	7,500
Pressedware ...	2,500	2,000	4,000
Sheet glass mill. sq. ft.	28	20	42
Plate glass mill. sq. ft.	304	not known	4
Scientific glass ...	Rs. 1.9 lakhs	"	Rs. 10 lakhs
Glass shells ...	Mill Prices not known	14	25

TABLE XLIX. PIECES OF HIDES AND SKINS TANNED IN INDIA AND EXPORTED.

(In lakhs)

	Pieces	Tanned in India.	Exported
Buffalo Hides ...	62	55.8	6.2
Cow Hides ...	205	158.9	46.1
Goat Skins ...	300	60.0	239.4
Sheep Skins ...	200	186.8	13.2

TABLE L. DECLINE IN INDUSTRIAL PRODUCTION DURING 1945-46 AND 1946-47.

	1945-46	1946-47	Percentage Fall.
Cotton Piecegoods			
(million yds.)	4651	3863	17
Cotton Yarn (million lb.) ...	548	470	14
Paper (cwt. '000) ...	1681	1244	26
Sugar (cwt. '000) ...	10230	8666	15
Matches (gross millions) ...	2021	1239	39
Cement (tons '000) ...	2146	2016	6
Pig Iron (tons '000) ...	1422	1365	4
Steel Ingots (Do.) ...	1299	1199	8
Finished Steel (Do.) ...	1338	1160	21
Coal (Do.) ...	26543	26218	1.3

(Source: Commerce. 7th August, 1948)

TABLE LI. INDUSTRIAL PRODUCTION DURING 1948.

Industry	1st quarter of 1948.	3rd quarter of 1948	Causes of Decline	Miscellaneous.
Cotton Textile	Figures not available; but production in second quarter has not been maintained.			
Steel Output	224000 tons	211000 tons	Mainly due to breakdown of a SCOB's sheet mill.	—
Coal Raising	Over 8 million Tons	6.7 million tons	Shortage of Transport, Accumulated pithead stocks in Bengal and Bihar coal-fields at the end of August 1948 were 2.26 million tons against a normal figure of 750000 tons.	7.6 m. tons (2nd quarter of 1948).
Coal Despatch	6.49 million Tons	6.35 million tons		7.3 m. tons. (3rd quarter of 1947).
				6.44 m. tons (2nd quarter of 1948).
Cement	374000 Tons in April-June	356000 tons in July-Sept.	Lack of adequate transport facilities.	—
Raw Silk	523000 lbs. in 3rd quarter of 1947	490000 lbs	Present Consumption 4 million lbs.	—
Paper	24000 tons	23000 tons	"The mills had either to close for short periods owing to shortage of raw materials or slow down."	—

TABLE XLII. SHOWING THE PRODUCTION AND CONSUMPTION OF COTTON IN INDIAN MILLS IN 1946-47.

In lakhs of bales)

Staple Length	Classification	Production	Mill Consumption			
			Indian	Pakistan	Foreign	Total
1" & above	Superior Long Staple	1.0	1.0	2.0	7.0	10.0
7/8" to 31/32"	Long staple	3.5	2.9	2.2	—	5.1
13/16" to 27/32"	Superior Medium staple	7.0	6.7	2.3	—	9.0
Below 13/16" & above 11/16"	Medium staple	6.0	5.8	3.3	—	9.1
11/16" & below	Short staple	8.5	5.4	—	—	5.4
		26.0	21.8	9.8	7.0	38.6

TABLE XLIII. SHOWING THE AREA AND YIELD OF JUTE CROP IN INDIAN UNION AND PAKISTAN IN 1946.

Provinces & States	Area (In acres)	Yield (in bales of 400 lbs.)
West Bengal ...	185729	617235
Cooch Behar ...	26825	56555
Tripura State ...	10000	22000
Assam ...	161500	407300
Bihar ...	144900	250700
Orissa ...	23800	58020
Indian Union Total ...	552754	1411810
East Pakistan Total ...	1327256	4004305

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